PART TWO

Overviews of the Textbook Chapters and Teaching Tips

Chapter 1
Why Study Money, Banking, and Financial Markets?

Before embarking on a study of money, banking, and financial markets, the student must be convinced that this subject is worth studying. Chapter 1 pursues this goal in two ways. First, it shows the student that money and banking is an exciting field because it focuses on economic phenomena that affect everyday life. Second, using eight figures, this chapter encourages the student to look at data that bear on the central issues in this field. An additional purpose of Chapter 1 is to provide an overview for the entire book, previewing the topics that will be covered in later chapters, and to indicate how the book will be taught.

In teaching this chapter, the most important goal should be to get the student excited about the material. I have found that talking about the data presented in the figures helps achieve this goal. Furthermore, it shows the student that the subject matter of money and banking has real-world implications that the student should care about.

The Web appendix to this chapter reviews concepts regarding the definitions of aggregate output, income, and the price level that the student already has seen in an economic principles course. Since these concepts are extremely important, it might be worthwhile to have your students read this appendix outside of class to jog their memories.

Chapter 2
An Overview of the Financial System

Chapter 2 is an introductory chapter that contains the background information on the structure and operation of financial markets that is needed in later chapters of the book. This chapter allows the instructor to branch out to various choices of later chapters, thus allowing different degrees of coverage of financial markets and institutions.

The most important point to transmit to the student is that financial markets and financial intermediaries are crucial to a well-functioning economy because they channel funds from those who do not have a productive use for them to those who do. Professors who emphasize financial markets and institutions in their course will want to teach this chapter in detail, and those who focus on international issues will want to spend some time on the section "Internationalization of Financial Markets." However, those who slant their course to monetary theory and policy may want to give this chapter a more cursory treatment. No matter how much class time is devoted to this chapter, I have found that it is a good reference chapter for students. You might want to tell them that if in later chapters they do not recall what some financial instrument is or who regulates whom, they can refer back to this chapter, especially to summary tables, such as Tables 3 and 5.

The chapter introduces Global boxes, which are sprinkled throughout the text, to get students to recognize the growing importance of the global economy. The Global box in this chapter gets students to think about how the financial system in the U.S. is both similar to and different from financial systems in other countries.

Chapter 3
What Is Money?

Before becoming immersed in the study of money and banking, the student must understand how money is defined and measured. The first half of Chapter 3 discusses the definition of money: how the economist's definition differs from that of common speech, the functions of money, and a historical view of how what serves as money has changed over time. The second half of the chapter describes the tricky issues involved in applying the definition of money in order to measure it.

Once the student understands what money is, the most important point to get across to him or her is that economists are not exactly sure how to measure money. This presents to policymakers a serious problem: Although they might want to control the money supply to affect the economy, they are not sure which measure of money is the right one to control. In many situations, knowing which measure of money is the right one is not crucial because different measures (such as Ml, M2, and M3) move together. But, as Figure 1 illustrates, this is sometimes not the case, presenting the policymaker with a dilemma.

A second point to emphasize is illustrated in Table 2: We should not pay very much attention to short-run movements in the published money supply numbers, because data revisions can be substantial. Rather, we should focus on longer-run movements, such as growth rates over a year's time.

Chapter 4
Understanding Interest Rates

In my years of teaching money and banking, I have found that students have trouble with what I consider to be easy material because they do not understand what an interest rate is—that it is negatively associated with the price of a bond, that it differs from the return on a bond, and that there is an important distinction between real and nominal interest rates.

This chapter spends more time on these issues than does any other competing textbook. Furthermore, it contains many numerical applications to drive home the concepts. My experience has been that giving this material so much attention is well rewarded. After putting more emphasis on this material in my money and banking courses, I witnessed a dramatic improvement in students' understanding of bank asset and liability management, portfolio choice, models of the demand for money, and other topics in monetary theory. I also have found that students very much enjoy this chapter, especially the "Reading the *Wall Street Journal*" application in which they learn to read the bond page. They feel that this chapter is very "real world" and will be useful to them in their careers.

This chapter introduces Following the Financial News boxes which contain news items and data that are reported daily in the press. These boxes help explain how to read the data and help encourage students to start reading financial newspapers. An additional innovative feature of the book that first appears in this chapter are the special applications, "Reading the *Wall Street Journal.*" These applications show students how the analytical framework in the book can be used directly to understand the daily data and columns in the United States' leading financial newspaper. The students particularly like the application on reading the bond page of the *Wall Street Journal* because it shows them that the concepts developed in the chapter are actually used in the real world.

Because the analytical material in this chapter is somewhat dry (although important), it is worthwhile spicing it up with discussion of the boxes to liven it up for students. The Global box on negative T-bill rates shows that strange things do indeed happen in the world. This chapter also introduces FYI boxes, which highlight dramatic historical episodes, interesting ideas, and intriguing facts to keep students excited about the material.

Chapter 5
The Behavior of Interest Rates

As is clear in the Preface to the textbook, I believe that money and banking is taught effectively by emphasizing a few economic principles and then applying them over and over again to the subject matter of this exciting field. Chapter 5 introduces one of these basic economic principles: the theory of asset demand. This theory indicates that there are four primary factors that influence people's decisions to hold assets: wealth, expected returns, risk, and liquidity. The simple idea that these four factors explain the demand for assets is, in fact, an extremely powerful one. It is used continually throughout the study of money and banking and makes it much easier for the student to understand how interest rates are determined, how banks manage their assets and liabilities, why financial innovation takes place, how prices are determined in the stock market and the foreign exchange market, and how various theories explain the demand for money.

One teaching device that I have found helps students develop their intuition is the use of summary tables such as Table 1 in class. I use the blackboard to write a list of changes in variables that affect the demand for an asset and then ask students to fill in the table by reasoning how demand responds to each change. This exercise gives them good practice in developing their analytic abilities. I use this device continually throughout my course and in this book, as is evidenced from similar summary tables in later chapters. I recommend this approach highly.

Chapter 5 goes on to lay out two partial equilibrium approaches to the determination of interest rates: supply and demand in the bond market and the liquidity preference framework (supply and demand in the money market). As is made clear in this chapter, these approaches are not inconsistent with each other but are two different and useful ways of looking at the same thing.

An important feature of the analysis in this chapter is that supply and demand is always done in terms of stocks of assets, not in terms of flows. Recent literature in the professional journals almost always analyzes the determination of prices in financial markets with an asset-market approach: that is, stocks of assets are emphasized rather than flows. The reason for this is that keeping track of stocks of assets is easier than dealing with flows. Correctly conducting analysis in terms of flows is very tricky, for example, when we encounter inflation. Thus there are two reasons for using a stock approach rather than a flow approach: (1) It is easier, and (2) it is more consistent with modern treatment of asset markets by economists.

Another important feature of this chapter is that it lays out supply and demand analysis of the bond and money markets at a similar level to that found in principles of economics textbooks. The *ceteris paribus* derivation of supply and demand curves with numerical examples are presented, the concept of equilibrium is carefully developed, the factors that shift the supply and demand curves are outlined, and the distinction between movements along a demand or supply curve and shifts in the curve are clearly drawn. My feeling is that the step-by-step treatment in this chapter is worthwhile because supply and demand analysis is such a basic tool throughout the study of money, banking, and financial markets. I have found that even those students who have had excellent training in their principles course find that this chapter provides a valuable review of supply and demand analysis.

An appendix to the chapter which can be found on the Web site shows how the analysis developed in the chapter can be applied to understanding how any asset's price is determined. Many students like the application to the gold market because this commodity piques almost everybody's interest.

This chapter is also designed to show the student how useful economic analysis can be. The Following the Financial News box illustrates that the supply and demand analysis in this chapter is used in the real world to solve a practical problem—forecasting interest rates. The "Reading the *Wall Street Journal*" applications on the Credit Markets column shows students how they can use the concepts they have learned to understand material that they can read about every day. In teaching my class, I bring the previous days' *Wall Street Journal* columns into class and then use them to conduct a case discussion along the lines of the "Reading the *Wall Street Journal*" applications in the text. My students very much like the resulting case discussions and have told me that they are better than case discussions in other classes because the material is so current. The application at the end of the chapter encourages students to use all they have learned in this chapter to analyze an important issue to policymakers—the relationship between money and interest rates.

Chapter 6
The Risk and Term Structure of Interest Rates

Chapter 6 applies the tools the students learned in Chapter 5 to understanding why and how various interest rates differ. In courses that emphasize financial markets, this chapter is important because students are curious about the risk and term structure of interest rates. On the other hand, professors who focus on monetary theory and policy in their courses might want to skip this chapter. The book has been designed so that skipping this chapter will not hinder the student's understanding of later chapters.

A particularly attractive feature of this chapter is that it gives students a feel for the interaction of data and theory. As becomes clear in the discussion of the term structure, theories are modified because they cannot explain the data. On the other hand, theories do help to explain the data, as the application to interpreting yield curves in the 1980–2009 period demonstrates.

Chapter 7
The Stock Market, the Theory of Rational Expectations, and Efficient Market Hypothesis

Because the stock market is of such great interest to students, this chapter discusses theories of how stocks are priced and how information is incorporated into stock prices. Laying out the simple models of the one-period valuation model, the generalized dividend valuation model, and the Gordon growth model gives students the tools to understand how stock prices are determined. Two applications show students how relevant these models are by applying them to see how monetary policy influences stock prices.

An important development in monetary theory that has far-reaching implications for the way we evaluate economic policy is the theory of rational expectations. Chapter 7 explains this theory and its application to financial markets, which is referred to as the efficient market hypothesis. Although the theory of rational expectations can be laid out in mathematical terms, I have found that it is best to give the students an example such as Joe Commuter's expectations to give them an intuitive sense of what "rational expectations" mean. When provided with a graphic example like that used in the text, students have no trouble understanding the theory of rational expectations, which is really just good common sense.

The implications of rational expectations theory become much clearer when this theory is used to understand behavior in the financial markets as in the efficient market hypothesis. Another area of exciting new research has been on the validity of rational expectations and efficient markets. Recent work has been dredging up fascinating anomalies that cast doubt on these theories. This chapter has therefore been written to give a more balanced view of these theories: it reflects this latest research, including a discussion of the new field of behavioral finance, which applies concepts from other social sciences like anthropology, sociology, and, particularly psychology, to understand the often anomalous behavior of security prices.

Students particularly enjoy the application of rational expectations (efficient market hypothesis) theory to provide a practical guide to investing in the stock market. This application captures the attention of even the most disinterested student because all of us are interested in how to get rich (or, at least, in how to keep from getting poor). This application also gives students practice using the reasoning that they learned earlier in the chapter. In addition, the theory is confronted with evidence that shows the student important implications for the real world.

Chapter 8
An Economic Analysis of Financial Structure

The development of a new literature in economics on asymmetric information and financial structure in recent years now enables financial institutions to be taught with basic economic principles rather than placing emphasis on a set of facts that students may find boring and so will forget after the final exam. This chapter provides an outline of this literature to the student and provides him or her with an economic understanding of why our financial system is structured the way it is. In addition, it emphasizes the ideas of adverse selection and moral hazard, which are basic economic concepts that are useful in understanding financial crises in Chapter 9, principles of bank credit risk management in Chapter 10, and principles of bank regulation in Chapter 11.

The chapter begins with a discussion of eight basic facts about financial structure. Students find some of these facts to be quite surprising—the relative unimportance of the stock market as a source of financing investment activities, for example—which piques their interest and stimulates them to want to understand the economics behind our financial structure. The next two sections then explain these facts by providing an understanding of how transaction costs and asymmetric information affect financial structure. My experience with teaching this material is that it is very intuitive and therefore easy for students to learn. Furthermore, students find the material inherently exciting because it explains phenomena that they know are important in the real world. I have also found that it helps students to learn facts about the financial system because they now have a framework to make sense out of all these facts.

Two applications give students practice with using the concepts in the earlier asymmetric information analysis. They examine the role of financial development on economic growth and whether China is a counter-example to the importance of financial development. Students find these applications to be very stimulating because there is something inherently exciting about economic growth. These applications can be skipped without loss of continuity, especially for courses focusing on financial institutions.

The chapter contains a final section on "Conflicts of Interest," which discusses what conflicts of interest are and why we should care about them. Recent corporate and accounting scandals due to conflicts of interest have received tremendous public attention and are thus highly interesting to students because resulting bankruptcies have cost employees of these firms their jobs and their pensions, and because the scandals may have hampered the efficient functioning of the financial system. It is important to emphasize to students that conflicts of interest occur when people who are supposed to act in the interests of the investing public by providing them with reliable information, instead have incentives (conflicting interests) to deceive the public to benefit themselves and their corporate clients The section ends by providing a survey of the different types of conflicts of interest in the financial industry and discusses policies to remedy them.

The chapter has been designed to keep the textbook very flexible. The concepts of adverse selection and moral hazard were explained in Chapter 2 and are explained again in Chapter 10, so that Chapter 8 does not have to be covered in order to teach this or later chapters. Furthermore, the applications at the end of the chapter do not need to be covered in order to teach other chapters in the book.

Chapter 9
Financial Crises and the Subprime Meltdown

Financial crises are inherently interesting because they are so dramatic. This has become even more with the subprime financial crisis. Indeed, teaching this new chapter on the financial crises and the subprime meltdown has piqued students interest more than anything else I have taught in my entire career of over thirty years of teaching.

This chapter is an application of the agency theory, the economic analysis of the effects of asymmetric information (adverse selection and moral hazard), that was covered in the previous chapter. Agency theory is used to outline the six factors that play key roles in financial crises. Your students will really start to get engaged when you outline the dynamics of financial crises. I have found that the two figures with schematics, Figure 1 and Figure 3, are especially helpful in getting the dynamics across in class.

Students will be most interested in using the analysis to discuss the recent subprime financial crisis, which is the worst financial crisis to hit the world since the Great Depression. Nonetheless, the application on the Great Depression is worth covering because it contains so many lessons for today. The last half of the chapter focuses on financial crises in emerging market economies. This material can be easily skipped. However, if the course has an international focus, it is material well worth covering.

Chapter 10
Banking and the Management of Financial Institutions

Although this chapter performs the conventional function of outlining what banks (depository institutions) do and what their balance sheets look like, it also emphasizes the economic way of thinking about how banks manage their assets and liabilities to make a profit. Three tools are used throughout this chapter and the rest of the book—the asymmetric information concepts of adverse selection and moral hazard, introduced in Chapter 2, the theory of asset demand developed in Chapter 5, and T-accounts, introduced in this chapter. In teaching this material, it is worth emphasizing to the student that mastery of these tools will pay high dividends in helping them to learn (and perform well on exams) in this course.

The economics of bank management is important, not only because it will help students comprehend the operation of banks, the most important of our financial intermediaries, but also because bank management affects the money supply, as shown in Chapter14. The first three sections of the chapter—“The Bank Balance Sheet,” “Basic Banking,” and “General Principles of Bank Management”—place particular emphasis on the question of why banks hold excess reserves, since banks’ decisions about the amount of excess reserves they hold play an important role in the money supply process.

The subsection “Capital Adequacy Management,” and the final three sections in the chapter, “Managing Credit Risk,” “Managing Interest-Rate Risk,” and “Off-Balance-Sheet Activities,” discuss issues that have become increasingly important in recent years. Many instructors may therefore want to include this material in their courses, yet none of this material is essential to understanding later chapters, so it can be skipped without any loss of continuity. The application on how a capital crunch caused a credit crunch during the subprime financial crisis particularly piques the interest of students because it shows how changes in banks’ behaviors can have major effects on the economy.

Chapter 11
Economic Analysis of Financial Regulation

This chapter stresses the economic way of thinking by conducting an economic analysis using the adverse selection and moral hazard concepts to show why our regulatory system takes the form it does and how it led to a banking crisis in the 1980s.

An appendix on the Web site has a much more extensive discussion of the banking and S&L crisis, which is still relevant today because many of the same forces that caused the banking and S&L crisis in the 1980s caused the recent subprime financial crisis as well as the bailout of Fannie Mae and Freddie Mac. The appendix also has a detailed discussion of the principal-agent problem and how it explains the political economy of the banking crisis. This material is highly stimulating to students because it helps them understand how our political system affects our economic system. Also students, like all of us, like reading about scandals, and this is why the Charles Keating story in the FYI box makes the principal-agent problem come alive.

The chapter ends with a discussion of where financial regulation might be heading in the aftermath of the subprime financial crisis. Instead of lecturing on this issue, I have the students themselves speculate on what measures may be needed to prevent a crisis like this from happening again. This gets them to apply the concepts in this chapter and makes for a very spirited discussion.

Note that Chapter 8 does not need to be covered in order to teach this chapter. However, if Chapter 8 is covered in class, Chapter 11 is a nice application of the analysis in that chapter. Indeed, the instructor might want to stress in class the counterparts in private financial markets to the methods financial regulators use to cope with adverse selection and moral hazard.

Chapter 12
Banking Industry: Structure and Competition

Chapter 12 supplements Chapter 2 by going into much greater detail about the structure of the banking system. This chapter differs from conventional chapters on the banking industry in other money and banking textbooks by stressing a more dynamic, analytical framework than in other books. In particular it provides an analytic framework for understanding the process of financial innovation in which financial institutions respond to changes in the financial environment by searching for innovations that are likely to be profitable. This framework is then used to show how financial innovation and changes in the ability to process information have led to a decline in the traditional banking business and to fundamental changes in the structure of the banking industry.

Chapter 13
Central Banks and the Federal Reserve System

Chapters 13–16 explore in detail how monetary policy is conducted. Although most professors covering monetary theory will want to include much of this material in their courses, later chapters on monetary theory do not directly depend on Chapters 13–16, so they can be skipped without loss of continuity. Other professors covering monetary theory may prefer to teach this material after they have taught the chapters on monetary theory.

The chapter starts by laying out modern theories of central banking: It first discusses the price stability goal and the role of a nominal anchor in solving the time-inconsistency problem, and then discusses the other goals of monetary policy and why price stability is now viewed as the primary goal of monetary policy.

The time-inconsistency problem is one of the most important ideas in monetary theory in the last twenty years. I illustrate the time-inconsistency problem by using the example of how many people cannot stick to a diet even though they know this is the right thing for them to do in the long run. Many other examples can bring this idea home to the student. Another good example is the fact that it is optimal not to give in to children when they are behaving badly, but parents still have a tendency to renege on this optimal plan. A third example is that governments usually provide funds to rebuild in coastal areas after a hurricane, even though it is not optimal to build in areas that are likely to be ravaged by hurricanes. You might ask the students to think of other examples in order to hammer home this important idea.

The chapter then discusses how the central bank in the United States—the Federal Reserve System—operates. The basic point that should be driven home in class is that although the Federal Reserve System has a complicated bureaucratic structure, in practice, it functions like a single central bank, headquartered in Washington, D.C. Students should enjoy the discussion of how foreign central banks are structured and how foreign central banks are similar to or differ from the central bank in the United States.

To help the instructor spice up the discussion of the Federal Reserve, I try to provide an inside view of the Fed by including material on such topics as the political genius of the way the Federal Reserve was set up to preserve its independence, the special role of the Federal Reserve Bank of New York and the research staff in the Federal Reserve System, the role of member banks, how a typical FOMC meeting is conducted, how Ben Bernanke's style differs from that of the former Chairman of the Fed, Alan Greenspan, and how the foreign exchange and open market desks at the Federal Reserve Bank of New York operate. To feature this new material I have included some of it in a set of special interest boxes, titled "Inside the Fed," which provide insights on how the Federal Reserve System operates although they are based on information that is entirely in the public domain.

Until recently, the Federal Reserve had no significant rivals in the central banking world. This changed in January 1999 with the startup of the European Central Bank (ECB), which now conducts monetary policy for countries that are members of the European Monetary Union, which in total have a population that exceeds that of the United States and a GDP comparable to that of the U.S. Because of growing interest by students in the workings of the European Central Bank, the chapter has an extensive discussion of the structure and independence of the European Central Bank. To motivate this material, I focus on how the ECB is similar to the Federal Reserve and how it differs. The chapter also contains brief descriptions of the structure and independence of three other important central banks of interest to students: the Bank of Canada, the Bank of England, and the Bank of Japan.

Students seem to particularly enjoy the next section in the chapter which discusses the theory of bureaucratic behavior and the related issue of whether or not central banks should be independent. Thus I recommend focusing on these topics, rather than the detail of the Fed's and other central banks' structures, which can be tedious.

In addition to the institutional detail on the Fed and other central banks that is usually found in money and banking textbooks, Chapter 13 also tries to provide the student with a feel for what motivates central bankers. Furthermore, discussing the theory of bureaucratic behavior shows students that the economic way of thinking is useful in understanding a wider range of problems than they might otherwise have thought.

Chapter 14
The Money Supply Process

This chapter provides an analysis of how the money supply is determined. One point that needs to be emphasized at the outset is that the money supply is not determined solely at the whim of the central bank; rather, there are two other players in the money supply process who also play an important role: banks and depositors. Chapter 14 first extensively discusses the simple model of multiple deposit creation, even though it is unrealistic and does not feature all of the players, because it illustrates the basic principles used later in the chapter. The critique of the simple model of multiple deposit creation then leads to a discussion of the money multiplier and a more complete treatment of the money supply process.

I have found that going over the summary Table 1 with students in class is an excellent device to help them review the money supply model; it gives them an overall and complete picture of how the money supply is determined.

Chapter 14 ends with an application on how the bank panics during the 1930s affected the money supply, It should convince students that the analysis they have learned is not mere theorization but a useful means of explaining important historical events. Students also find this discussion to be especially stimulating because bank panics are dramatic events that capture their interest.

This chapter has an appendix on the Web site that derives the M2 money multiplier and explains the intuition behind it. Some instructors may want to cover this material in class because it shows how money supply analysis can be extended to monetary aggregates other than M1. In addition, it provides students with additional practice in using the concepts they have learned in the chapter.

For instructors who would prefer to deemphasize discussion of the money supply process in their course, this chapter can easily be skipped. I have also found that I can skip this chapter.

Chapter 15
Tools of Monetary Policy

Chapter 15 examines in detail the tools at the Fed's (and the European Central Bank's) disposal for conducting monetary policy. To fully understand how the Fed's tools are used in the conduct of monetary policy, this chapter shows how they affect the federal funds rate directly. Students are introduced to the nitty gritty of how the Fed wields these tools and are exposed to current debates on whether Fed policymaking could be made more effective by altering their use of these tools. One basic conclusion that should be emphasized in class is that open market operations are the Fed's primary tool in conducting monetary policy.

To keep the material in this chapter from being too descriptive, I have started the chapter with an analytic analysis of how Federal Reserve actions influence the federal funds rate. This analysis reflects the changes in the way the market for reserves works because the Fed now pays interest on reserves. The chapter also includes applications on why reserve requirements have been declining throughout the world and on the channel/corridor approach for setting interest rates used by other countries. Teaching these applications encourages students to use their economic intuition to understand the tools of monetary policy better.

One topic that frequently does not get enough attention in money and banking courses is the lender-of-last-resort function of discounting. I feel this function should be stressed in class because students find it inherently interesting in the wake of the recent massive operations by the Fed during the subprime financial crisis. Students particularly like to hear about real-world examples of discounting to avoid banking and financial panics. It is particularly worth discussing in class the examples in the Inside the Fed box on the Federal Reserve's lender-of-last-resort facilities during the subprime financial crisis.

Chapter 16
The Conduct of Monetary Policy: Strategy and Tactics

Chapter 16 outlines the strategy and tactics of central bank policymaking. It starts by discussing three strategies—monetary targeting, inflation targeting, and monetary policy with an implicit nominal anchor a la Greenspan. I have found that discussing the pros and cons of each piques students interest. One teaching technique is to have the students debate which strategy is best. The summary table in Table 1 is also a good teaching tool to summarize this debate.

The chapter then moves on to discuss monetary policy tactics: in particular, what policy instrument should be choosen to conduct monetary policy. Figures 2 and 3 illustrate why targeting on a monetary aggregate like nonborrowed reserves implies a loss of control of interest rates like the federal funds rate, while targeting on the federal funds rate implies a loss of control of monetary aggregates. This analysis can also be done in terms of the supply and demand for money framework. Indeed, covering this topic is an excellent way of providing students with another application to give them practice with the supply and demand analysis for the market for reserves or the market for money.

The second tactical issue is how to set a target for the federal funds rate with the so-called Taylor rule. Discussion of the Taylor rule helps students understand that the Fed focuses on inflation but also on fluctuations around potential output. The role of the output gap in setting monetary policy follows from Phillips curve theory and the validity of the NAIRU concept. The Phillips curve and NAIRU are very controversial of late, and a discussion of the controversy can engage students in understanding how difficult it is for the Federal Reserve to decide on the appropriate stance of monetary policy.

The third tactical issue has been brought to the fore lately by the subprime financial crisis: that is, how should central banks respond to asset-price bubbles. Asset-price bubbles are particularly interesting to students because they involve huge booms in asset prices and then crashes, which are very dramatic. The issue of what should be done about asset-price bubbles is very controversial and so one way of teaching this material is to stage a debate in class with two opposing views: that central banks should not respond at all, which is the position associated with Alan Greenspan, or the alternatively, that monetary policy should try to preemptively prick bubbles.

The chapter ends with a historical discussion of how the Fed has conducted monetary policy over the last 90 years. It presents students with many real-world examples that make the study of monetary policy more concrete. It also provides students with a review of the money supply process and how the Fed's policy tools work, thus giving them another pass at this material, which should solidify their understanding of it. Finally it will give students some perspective on where monetary policy may be heading in the future.

Chapter 17
The Foreign Exchange Market

Chapter 17 explains behavior in the foreign exchange market by using a modern asset-market approach to exchange rate determination. This asset-market approach is now the dominant method of analyzing exchange rate movements in the literature, and it has major advantages over the more conventional treatment of the foreign exchange market typically found in money and banking textbooks.

As the first application in the chapter indicates, the asset-market approach, in contrast to earlier approaches emphasizing import and export demand, can be used to explain a feature of the foreign exchange market that has received much attention in the press in recent years: the high volatility of exchange rates. This phenomenon is not well explained by the earlier flow approach because it does not predict that exchange rates should be highly volatile.

The asset-market approach is developed in several steps. First, the long-run determinants of the exchange rate are laid out, and then the information about the long-run determinants is embedded in a model of the short-run determination of exchange rates. The key idea that must be transmitted to the student is that the demand for domestic currency (say dollar) assets is determined by the relative expected return on these assets.

To help students achieve an intuitive grasp of how the relative expected return on domestic assets, and hence the demand curve shifts, tell them to put themselves in the shoes of an investor who is thinking about putting his or her money into foreign or domestic assets. When a factor changes, have them ask themselves whether at the same exchange rate, they would earn a higher expected return on domestic assets—if so, the demand curve has shifted to the right. This kind of thinking will help them manipulate the demand curve so they can predict which way the exchange rate changes. Several summary tables in the chapter should help students master the material, and I have found that using them in class helps greatly in clarifying the discussion.

The five applications in the chapter on the response of exchange rates to changes in interest rates and the money supply, why exchange rates are so volatile, the relationship between the value of the dollar and interest rates, the Euro's first seven years, and reading the "currency trading" column in the *Wall Street Journal* can all be used in class to show students that the material they have learned has practical uses. In teaching my class, I again bring the previous days' *Wall Street Journal* Foreign Exchange column into class and then conduct a case discussion along the lines of the "Reading the *Wall Street Journal*" application in the text. The case discussion is always very lively and the students love it.

Some instructors like to teach the foreign exchange market at the same time they discuss the bond market and stock market. They can do this by teaching this chapter immediately after Chapter 7 if they so choose.

Chapter 18
The International Financial System

Chapter 18 shows why international financial transactions have important implications for the conduct of monetary policy. The beginning of the chapter explains how foreign exchange market intervention affects both the exchange rate, a country's international reserves, and the money supply. It then discusses the balance of payments, but this sometimes dry topic can be spiced up for students by a discussion of the box on why large current account deficits worry economists.

The chapter then goes on to discuss the evolution of the international financial system and how fixed exchange rate systems work. Three applications in this section make the material come alive for students. The first examines how China has accumulated close to $1 trillion of international reserves, a subject of great interest to students. The next two examine the September 1992 foreign exchange crisis and recent foreign exchange crises in emerging market countries. These applications capture the imagination of students because huge profits were made during these crises and because government intervention in the markets was massive. These applications also give students further practice with the model of the foreign exchange market developed in Chapter 17.

The currency and financial crises in Mexico, East Asia, Brazil, and Argentina in recent years have caused policymakers throughout the world to focus on how the architecture of the international financial system might be reformed in order to limit the threat of financial crises. Concerns about international financial architecture have led to a lively debate, to say the least, about the role of the International Monetary Fund and capital controls. I use the discussion in the text on these subjects to stimulate a lively debate among the students, which gets them to realize that what happens outside the United States is still of tremendous importance to us. The next section on international considerations and monetary policy explains how monetary policy can be affected by international financial transactions and movements in the exchange rate, and this material is closely related to the discussion in Chapter 16 about the conduct of monetary policy.

The final section on exchange rate targeting can be staged as a debate in class of the pros and cons of fixed versus flexible exchange rate regimes and can be linked to the discussion of international financial architecture. Debates can also be staged on the desirability of exchange rate targeting versus other monetary policy strategies such as monetary targeting versus inflation targeting.

Chapter 19
The Demand for Money

Chapter 19 discusses one of the basic building blocks of monetary theory, the demand for money. The treatment of the demand for money in this chapter is quite detailed. Thus this material is more appropriate for a course that emphasizes monetary theory, and many professors will prefer not to cover it. Later chapters do not depend on this material, so dropping it from your course will not hinder students' ability to understand later chapters.

This chapter describes how the theories of the demand for money have evolved over time. This seems to be the natural way to organize this material, and it gives the student an idea of how progress in economic theory proceeds. It is important to emphasize in class that a central question in monetary theory is whether the demand for money is affected by changes in interest rates, because this issue is crucial to how we view money's effect on aggregate economic activity. This is why the discussion in this chapter always focuses on the role of interest rates in the demand for money.

The chapter ends with a discussion of the current state of empirical evidence on the demand for money, and it focuses on two basic questions that are central in monetary theory: (1) How sensitive is the demand for money to changes in interest rates? and (2) Is the demand for money function stable over time? The discussion here is nontechnical but should give the student a feel for how empirical research in economics is done. A far more extensive discussion of the empirical evidence can be found in an appendix to this chapter on the Pearson Web site. If students in the course have some training in regression analysis, a professor may want to spend more time on the empirical work on money demand. An excellent supplementary reading in this case is Goldfeld's article, "The Demand for Money Revisited," listed in the footnotes in the appendix. This article is very clearly written and demonstrates how high-quality empirical work should be done.

To satisfy professors who want to include more mathematics in their teaching, an appendix found in the Web site provides a mathematical treatment of the Baumol-Tobin and the Tobin mean-variance models.

Chapter 20
The *ISLM* Model

Chapters 20 and 21 develop the *ISLM* model. Although this model is a standard one in monetary theory, some professors prefer not to cover it in their courses because it takes so much class time and is often quite difficult for students. An important feature of this book is that it is designed so that the *ISLM* model need not be covered in order for the student to learn the aggregate demand and supply framework—the basic tool for analyzing the effect of money on aggregate output and inflation. Chapters 20 and 21 can thus be skipped without any loss of continuity with later chapters.

Chapter 20 lays out the *ISLM* model step by step as follows: (1) It develops the consumption function; (2) proceeds to a Keynesian cross diagram for a model with no government sector; (3) adds the government sector to the model; (4) adds the international trade sector to the model; (5) derives the *IS* curve; (6) derives the *LM* curve; and (7) puts the *IS* and *LM* curves in one diagram and explains why equilibrium occurs at their intersection. The application in the middle of the chapter on the collapse of investment spending and the Great Depression livens up the material and should convince the student that Keynesian analysis does have something to say about real-world phenomena.

In order to bring international factors into *ISLM* analysis in Chapters 20 and 21, the definition of aggregate demand includes net exports. This allows the instructor to discuss how exchange rates and net exports influence interest rates and aggregate output in the *ISLM* model. If the instructor wishes to stay with a closed-economy framework, he or she can easily ignore the material in this and the next chapter which involves net exports because it doesn't affect the basic analysis. However, instructors who want to fully integrate international topics into their course might want to teach Chapter 17, which provides a more complete treatment of how monetary policy affects foreign exchange rates, before teaching Chapters 20 and 21.

One point to emphasize at the outset in teaching the *ISLM* model is that the price level is always being held fixed, so it is not necessary to distinguish between real and nominal magnitudes. Only at the end of Chapter 21 and in later chapters will this assumption be relaxed.

Chapter 21
Monetary and Fiscal Policy in the *ISLM* Model

Chapter 21 develops the *ISLM* model even further, focusing on the effects of monetary and fiscal policy. This chapter also proceeds in a step-by-step fashion to make it easier for the student to learn the material: (1) It outlines the factors that shift the *IS* curve; (2) outlines the factors that shift the *LM* curve; (3) shows how these shifts cause changes in the equilibrium level of the interest rate and aggregate output; (4) discusses the effectiveness of monetary versus fiscal policy; and (5) develops the aggregate demand curve from the *ISLM* model.

The application on targeting money supply versus interest rates shows how the *ISLM* model has something important to say about an issue raised in Chapter 16: Should the Fed conduct monetary policy by targeting the monetary aggregates or interest rates?

Chapter 21 has a mathematical appendix, found in the Web site, that provides an algebraic treatment of the *ISLM* model for those instructors who want to make their course more mathematical.

Chapter 22
Aggregate Demand and Supply Analysis

The basic tool used to analyze the role of money in the economy in this book is aggregate demand and supply analysis. My experience in the classroom suggests that aggregate demand and supply analysis is actually easier for students to learn than the *ISLM* model. They find it more intuitive because its diagram is similar to that found in standard supply and demand analysis, which is usually more familiar and thus more comfortable. So if you do not have enough time in your course to do both the *ISLM* model and aggregate demand and supply analysis, I recommend that you focus on the latter. In addition, as later chapters indicate, aggregate demand and supply analysis is useful for understanding important real-world problems such as inflation that cannot be analyzed effectively with the fixed-price *ISLM* model.

The aggregate demand curve is developed intuitively for those who have skipped the *ISLM* analysis in Chapters 20 and 21. Then the long-run supply curve is developed first because it is easy for students to see that it is vertical. The short-run aggregate supply curve is next developed in an intuitive fashion. It makes sense to students that given fixed production costs, a rise in the price level causes business firms to produce more in the short-run because they can earn higher profits. Also emphasize the intuitive concept that as production costs rise, firms' profits at a given price level will fall and so they will produce less; thus the short-run aggregate supply curve will shift in.

The concept of equilibrium in aggregate demand and supply analysis is easy to get across to students because they are already familiar with it from their study of standard supply and demand analysis. Emphasize that excess demand leads to rising prices, sending the economy to the equilibrium point; on the other hand, excess supply leads to a falling price level, again sending the economy into the equilibrium. The movement to long-run equilibrium can be explained intuitively by stressing that production costs will not stay fixed if the labor market is too easy or too tight. If, for example, the labor market is too easy (aggregate output is below the natural-rate level), production costs will fall, leading to an outward-shifting short-run aggregate supply curve, which only stops shifting when equilibrium output is at the natural-rate level. Then the economy is at long-run equilibrium at the intersection of the long-run aggregate supply curve at Y_n and the aggregate demand curve.

Once the student understands the basic framework outlined above, emphasize that other factors such as expected inflation, wage push, or supply shocks can affect the short-run aggregate supply curve. Then applications like those in the text, such as the Vietnam war buildup, negative supply shocks in 1973–75, 1978–1980, and 1995–99, negative demand shocks in 2001–2004, and the perfect storm of adverse shocks during the subprime financial crisis can be used in class to give the student practice with the aggregate demand and supply tool. The problems using economic analysis to predict the future at the end of the chapter should further drive home to the student the usefulness of aggregate demand and supply analysis.

In order to bring international factors into the aggregate demand and supply analysis of the chapter, net exports are included in the definition of aggregate demand. This enables the instructor to discuss how international trade flows can affect aggregate output and the price level. If the instructor wants to stick with a closed-economy framework, he or she can easily ignore the material in the chapter that deals with international trade by just leaving net exports out of his or her discussion. None of the basic analysis in this or later chapters will be affected by this choice. However, if the instructor wants to fully internationalize the course, he or she might want to teach Chapters 17 and 18, which provide a more complete description of how monetary policy affects foreign exchange rates, before teaching this chapter.

As the discussion above indicates, the professor does not need to make use of the Phillips curve to teach the aggregate demand and supply model. For those professors who like to talk about the Phillips curve, an appendix to Chapter 22, found on the Web site, shows that the Phillips curve concept is, in fact, embedded in aggregate demand and supply analysis. This material can easily be added to in-class discussion of this chapter by using it to explain why the short-run aggregate supply curve shifts when the labor market is either too tight or too easy.

Chapter 23
Transmission Mechanisms of Monetary Policy: The Evidence

Chapter 23 discusses the empirical evidence on whether or not money is important to aggregate economic activity and provides the student with an understanding of the transmission mechanisms of monetary policy. Students seem to enjoy this material because it gives them a feel for how tricky it is to interpret empirical evidence in economics and other social sciences. The chapter starts off by dichotomizing evidence into two types: reduced-form versus structural-model evidence. I have found that the best way to teach the difference between these two types of evidence and the advantages and disadvantages of each type is to give several analogies. The link between coffee drinking and heart disease mentioned in the chapter is one useful analogy; others include the link between cholesterol and heart disease or jogging and long life. Explaining why correlation does not imply causation is also helped by stories such as the boxes on the Russian folktale or how to lose an election in Box 2. Students find these stories to be fun, and they really drive the point home.

Once students understand the advantages and disadvantages of reduced-form versus structural-model evidence, encourage them to discuss the problems with the Keynesian and monetarist evidence described in the chapter in order to give them practice in using this knowledge. An important point to stress is that evidence is much easier to interpret if we have controlled experiments in which an event is exogenous; we can then look for what happens afterward. The ability to conduct controlled experiments in the hard sciences is one reason why empirical evidence in these sciences is so much more persuasive than in economics. This discussion also suggests why economists frequently look for exogenous events in evaluating empirical evidence: It makes the evidence stronger and easier to interpret, as is the case for monetarist historical evidence.

The last part of the chapter discusses the transmission mechanisms of monetary policy. This material exposes students to some of the latest and most exciting research in monetary economics, that on the credit view. The focus at the end of the chapter for the lessons this research provides to monetary policymaking, especially for Japan, also stimulates student interest.

Chapter 24
Money and Inflation

The problem of inflation is probably the issue in monetary theory that most captures students' interest. Chapter 24 opens by discussing the evidence on the link between money and inflation, showing students that the coming analysis is a useful way of understanding the inflation process. Evidence from the German hyperinflation clearly makes the case for the importance of money to the inflation process. Before proceeding to the economic theory of inflation, it is important to stress that the meaning of the word "inflation" in the statement "inflation is always and everywhere a monetary phenomenon" is not the same as that used in common speech. Economists' use of the word "inflation" refers to a continuing increase in the price level—in other words, a sustained rate of inflation.

The analysis of the inflation process is based on straightforward applications of aggregate demand and supply analysis. These applications will give students further practice with this model and will further convince them of its usefulness. The application of explaining the rise in U.S. inflation from 1960 to 1980 helps to tie all the theoretical analysis together and also indicates that economists understand inflation better than derogatory comments about economists in the press indicate.

The chapter ends by discussing the discretion/nondiscretion debate and how inflation might best be prevented. An important factor in this discussion is whether or not credibility matters to successful anti-inflation policy. The importance of credibility to successful policymaking is now at the forefront of debates in the economics profession and it is highlighted in the application on the importance of credibility to Volcker's victory over inflation. It provides an introduction to some of the issues that have been raised in the recent literature on rational expectations.

Chapter 25
Rational Expectations: Implications for Policy

The theory of rational expectations has had a major impact on monetary theory in recent years and is at the center of current controversies in the monetary economics field. Chapter 25 explains the "rational expectations revolution" and how it has affected economists' thinking about the conduct of economic policy.

Although the material covered in this chapter is at the cutting edge of monetary theory, it can be explained in nontechnical terms. The Lucas critique is explained with a straightforward example from the term structure of interest rates. One reason I like this example is that it deals with expectations in a financial market, a sector of the economy for which the theory and evidence supporting rational expectations are very strong.

Aggregate demand and supply analysis is used to examine the new classical macroeconomic model pioneered by Lucas and Sargent and to demonstrate the policy ineffectiveness proposition that anticipated policy has no effect on the business cycle. Aggregate demand and supply analysis is again used to demonstrate the properties of the nonclassical rational expectations model that is associated with Fisher, Phelps, and Taylor. To put these models into perspective, their properties are compared with a traditional model in which expectations are adaptive rather than rational. A valuable study aid that I use in class is to have students fill in the cells of Table 1 and then explain their reasoning. This not only gives them some practice with the three models but also helps them get a coherent picture of how these models relate to each other.

The end of the chapter returns to the role of credibility in fighting inflation, which was first discussed in Chapter 24. Students enjoy examples like the ending of the Bolivian hyperinflation because they are so dramatic and clearly illustrate the importance of credibility in successfully eliminating hyperinflations. The application that discusses credibility and the Reagan budget deficits asks the student to use the analysis he or she has learned in this chapter to see if Reagan's budget deficits might have made anti-inflation policy in that period less successful. The application not only gives students additional practice in using the material they have learned, but also shows them that this material is important in current policy debates.

PART THREE

Answers
to End-of-Chapter
Problems

Chapter 1
Why Study Money, Banking, and Financial Markets?

2. The data in Figures 1, 2, 3, and 4 suggest that real output, the inflation rate, and interest rates would all fail.

4. You might be more likely to buy a house or a car because the cost of financing them would fall, or you might be less likely to save because you earn less on your savings.

6. No. It is true that people who borrow to purchase a house or a car are worse off because it costs them more to finance their purchase; however, savers benefit because they can earn higher interest rates on their savings.

7. The basic activity of banks is to accept deposits and make loans.

8. They channel funds from people who do not have a productive use for them to people who do, thereby resulting in higher economic efficiency.

9. The interest rate on three-month Treasury bills fluctuates more than the other interest rates and is lower on average. The interest rate on Baa corporate bonds is higher on average than the other interest rates.

10. The lower price for a firm's shares means that it can raise a smaller amount of funds, so investment in facilities and equipment will fall.

11. Higher stock prices means that consumers' wealth is higher, and they will be more likely to increase their spending.

12. It makes foreign goods more expensive, so British consumers will buy fewer foreign goods and more domestic goods.

13. It makes British goods more expensive relative to American goods. Thus American businesses will find it easier to sell their goods in the United States and abroad, and the demand for their products will rise.

14. In the mid- to late 1970s and in the late 1980s and early 1990s, the value of the dollar was low, making travel abroad relatively more expensive; thus it was a good time to vacation in the United States and see the Grand Canyon. With the rise in the dollar's value in the early 1980s, travel abroad became relatively cheaper, making it a good time to visit the Tower of London.

15. When the dollar increases in value, foreign goods become less expensive relative to American goods; thus you are more likely to buy French-made jeans than American-made jeans. The resulting drop in demand for American-made jeans because of the strong dollar hurts American jeans manufacturers. On the other hand, the American company that imports jeans into the United States now finds that the demand for its product has risen, so it is better off when the dollar is strong.

Chapter 2
An Overview of the Financial System

1. The share of Microsoft stock is an asset for its owner, because it entitles the owner to a share of the earnings and assets of Microsoft. The share is a liability for Microsoft, because it is a claim on its earnings and assets by the owner of the share.

2. Yes, I should take out the loan, because I will be better off as a result of doing so. My interest payment will be $4,500 (90% of $5,000), but as a result, I will earn an additional $10,000, so I will be ahead of the game by $5,500. Since Larry's loan-sharking business can make some people better off, as in this example, loan sharking may have social benefits. (One argument against legalizing loan sharking, however, is that it is frequently a violent activity.)

3. Yes, because the absence of financial markets means that funds cannot be channeled to people who have the most productive use for them. Entrepreneurs then cannot acquire funds to set up businesses that would help the economy grow rapidly.

4. The principal debt instruments used were foreign bonds which were sold in Britain and denominated in pounds. The British gained because they were able to earn higher interest rates as a result of lending to Americans, while the Americans gained because they now had access to capital to start up profitable businesses such as railroads.

5. This statement is false. Prices in secondary markets determine the prices that firms issuing securities receive in primary markets. In addition, secondary markets make securities more liquid and thus easier to sell in the primary markets. Therefore, secondary markets are, if anything, more important than primary markets.

6. You would rather hold bonds, because bondholders are paid off before equity holders, who are the residual claimants.

7. Because you know your family member better than a stranger, you know more about the borrower's honesty, propensity for risk taking, and other traits. There is less asymmetric information than with a stranger and less likelihood of an adverse selection problem, with the result that you are more likely to lend to the family member.

9. Loan sharks can threaten their borrowers with bodily harm if borrowers take actions that might jeopardize their paying off the loan. Hence borrowers from a loan shark are less likely to increase moral hazard.

10. They might not work hard enough while you are not looking or may steal or commit fraud.

11. Yes, because even if you know that a borrower is taking actions that might jeopardize paying off the loan, you must still stop the borrower from doing so. Because that may be costly, you may not spend the time and effort to reduce moral hazard, and so the problem of moral hazard still exists.

12. True. If there are no information or transactions costs, people could make loans to each other at no cost and would thus have no need for financial intermediaries.

13. Because the costs of making the loan to your neighbor are high (legal fees, fees for a credit check, and so on), you will probably not be able earn 5% on the loan after your expenses even though it has a 10% interest rate. You are better off depositing your savings with a financial intermediary and earning 5% interest. In addition, you are likely to bear less risk by depositing your savings at the bank rather than lending them to your neighbor.

14. A ranking from most liquid to least liquid is (a), (b), (c), and (d). The ranking is similar for the most safe to the least safe.

15. Increased discussion of foreign financial markets in the U.S. press and the growth in markets for international financial instruments such as Eurodollars and Eurobonds.

Chapter 3
What Is Money?

1. (b)

2. Because the orchard owner likes only bananas but the banana grower doesn't like apples, the banana grower will not want apples in exchange for his bananas, and they will not trade. Similarly, the chocolatier will not be willing to trade with the banana grower because she does not like bananas. The orchard owner will not trade with the chocolatier because he doesn't like chocolate. Hence, in a barter economy, trade among these three people may well not take place, because in no case is there a double coincidence of wants. However, if money is introduced into the economy, the orchard owner can sell his apples to the chocolatier and then use the money to buy bananas from the banana grower. Similarly, the banana grower can use the money she receives from the orchard owner to buy chocolate from the chocolatier, and the chocolatier can use the money to buy apples from the orchard owner. The result is that the need for a double coincidence of wants is eliminated, and everyone is better off because all three producers are now able to eat what they like best.

3. Cavemen did not need money. In their primitive economy, they did not specialize in producing one type of good and they had little need to trade with other cavemen.

4. Because a check was so much easier to transport than gold, people would frequently rather be paid by check even if there was a possibility that the check might bounce. In other words, the lower transactions costs involved in handling checks made people more willing to accept them.

5. Wine is more difficult to transport than gold and is also more perishable. Gold is thus a better store of value than wine and also leads to lower transactions cost. It is therefore a better candidate for use as money.

6. Because money was losing value at a slower rate (the inflation rate was lower) in the 1950s than in the 1970s, it was then a better store of value, and you would have been willing to hold more of it.

7. Not necessarily. Checks have the advantage in that they provide you with receipts, are easier to keep track of, and may make it harder for someone to steal money out of your account. These advantages of checks may explain why the movement toward a checkless society has been very gradual.

8. The ranking from most liquid to least liquid is: (a), (c), (e), (f), (b), and (d).

9. Money loses its value at an extremely rapid rate in hyperinflation, so you want to hold it for as short a time as possible. Thus money is like a hot potato that is quickly passed from one person to another.

10. Because of the rapid inflation in Brazil, the domestic currency, the real, is a poor store of value. Thus many people would rather hold dollars, which are a better store of value, and use them in their daily shopping.

11. Not necessarily. Although the total amount of debt has predicted inflation and the business cycle better than M1 or M2, it may not be a better predictor in the future. Without some theoretical reason for believing that the total amount of debt will continue to predict well in the future, we may not want to define money as the total amount of debt.

13. M1 contains the most liquid assets. M2 is the largest measure.

14. (a) M1 and M2, (b) M2, (c) M2, (d) M1 and M2.

15. Revisions are not a serious problem for long-run movements of the money supply, because revisions for short-run (one-month) movements tend to cancel out. Revisions for long-run movements, such as one-year growth rates, are thus typically quite small.

Chapter 4
Understanding Interest Rates

1. Less. It would be worth $1/(1 + 0.20) = \$0.83$ when the interest rate is 20%, rather than $1/(1 + 0.10) = \$0.91$ when the interest rate is 10%.

2. No, because the present discounted value of these payments is necessarily less than $10 million as long as the interest rate is greater than zero.

3. $\$1{,}000/(1 + 0.10) + \$1{,}210/(1 + 0.10)^2 + \$1{,}331/(1 + 0.10)^3 = \$3{,}000$

4. The yield to maturity is less than 10 percent. Only if the interest rate was less than 10 percent would the present value of the payments add up to $4,000, which is more than the $3,000 present value in the previous problem.

5. $\$2{,}000 + \$100/(1 + i) + \$100/(1 + i)^2 + \ldots + \$100/(1 + i)^{20} + \$1{,}000/(1 + i)^{20}$.

6. $25\% = (\$1{,}000 - \$800)/\$800 = \$200/\$800 = 0.25$.

7. 14.9%, derived as follows: The present value of the $2 million payment five years from now is $\$2/(1 + i)^5$ million, which equals the $1 million loan. Thus $1 = 2/(1 + i)^5$. Solving for i, $(1 + i)^5 = 2$, so that $i = \sqrt[5]{2} - 1 = 0.149 = 14.9\%$.

8. If the interest rate were 12 percent, the present discounted value of the payments on the government loan are necessarily less than the $1,000 loan amount because they do not start for two years. Thus the yield to maturity must be lower than 12 percent in order for the present discounted value of these payments to add up to $1,000.

9. If the one-year bond did not have a coupon payment, its yield to maturity would be $(\$1{,}000 - \$800)/\$800 - \$200/\$800 = 0.25 = 25\%$. Because it does have a coupon payment, its yield to maturity must be greater than 25%. However, because the current yield is a good approximation of the yield to maturity for a twenty-year bond, we know that the yield to maturity on this bond is approximately 15%. Therefore, the one-year bond has a higher yield to maturity.

10. The current yield will be a good approximation to the yield to maturity whenever the bond price is very close to par or when the maturity of the bond is over ten years.

11. You would rather own the Treasury bill, because it has a higher yield to maturity. As the example in the text indicates, the discount yield's understatement of the yield to maturity for a one-year bill is substantial, exceeding one percentage point. Thus the yield to maturity on the one-year bill would be greater than 9%, the yield to maturity on the one-year Treasury bond.

12. You would rather be holding long-term bonds because their price would increase more than the price of the short-term bonds, giving them a higher return.

13. No. If interest rates rise sharply in the future, long-term bonds may suffer such a sharp fall in price that their return might be quite low—possibly even negative.

14. People are more likely to buy houses because the real interest rate when purchasing a house has fallen from 3 percent (= 5 percent − 2 percent) to 1 percent (= 10 percent − 9 percent). The real cost of financing the house is thus lower, even though mortgage rates have risen. (If the tax deductibility of interest payments is allowed for, then it becomes even more likely that people will buy houses.)

15. The economists are right. They reason that nominal interest rates were below expected rates of inflation in the late 1970s, making real interest rates negative. The expected inflation rate, however, fell much faster than nominal interest rates in the mid-1980s, so nominal interest rates were above the expected inflation rate and real rates became positive.

Chapter 5
The Behavior of Interest Rates

1. (a) Less, because your wealth has declined; (b) more, because its relative expected return has risen; (c) less, because it has become less liquid relative to bonds; (d) less, because its expected return has fallen relative to gold; (e) more, because it has become less risky relative to bonds.

2. (a) More, because your wealth has increased; (b) more, because the house has become more liquid; (c) less, because its expected return has fallen relative to Microsoft stock; (d) more, because it has become less risky relative to stocks; (e) less, because its expected return has fallen.

3. (a) More, because it has become more liquid; (b) less, because it has become more risky; (c) more, because its expected return has risen; (d) more, because its expected return has risen relative to the expected return on long-term bonds, which has declined.

4. (a) More, because the bonds have become more liquid; (b) more, because their expected return has risen relative to stocks; (c) less, because they have become less liquid relative to stocks; (d) less, because their expected return has fallen; (e) more, because they have become more liquid.

5. The rise in the value of stocks would increase people's wealth and therefore the demand for Rembrandts would rise.

6. When the Fed sells bonds to the public, it increases the supply of bonds, thus shifting the supply curve B^s to the right. The result is that the intersection of the supply and demand curves B^s and B^d occurs at a lower price and a higher equilibrium interest rate, and the interest rate rises. With the liquidity preference framework, the decrease in the money supply shifts the money supply curve M^s to the left, and the equilibrium interest rate rises. The answer from bond supply and demand analysis is consistent with the answer from the liquidity preference framework.

7. In the loanable funds framework, when the economy booms, the demand for bonds increases. The public's income and wealth rises while the supply of bonds also increases, because firms have more attractive investment opportunities. Both the supply and demand curves (B^d and B^s) shift to the right, but as is indicated in the text, the demand curve probably shifts less than the supply curve so the equilibrium interest rate rises. Similarly, when the economy enters a recession, both the supply and demand curves shift to the left, but the demand curve shifts less than the supply curve so that the interest rate falls. The conclusion is that interest rates rise during booms and fall during recessions: that is, interest rates are procyclical. The same answer is found with the liquidity preference framework. When the economy booms, the demand for money increases; people need more money to carry out an increased amount of transactions and also because their wealth has risen. The demand curve, M^d, thus shifts to the right, raising the equilibrium interest rate. When the economy enters a recession, the demand for money falls and the demand curve shifts to the left, lowering the equilibrium interest rate. Again, interest rates are seen to be procyclical.

8. When the price level rises, the quantity of money in real terms falls (holding the nominal supply of money constant); to restore their holdings of money in real terms to their former level, people will want to hold a greater nominal quantity of money. Thus the money demand curve M^d shifts to the right, and the interest rate rises.

10. Interest rates fall. The increased volatility of gold prices makes bonds relatively less risky relative to gold and causes the demand for bonds to increase. The demand curve, B^d, shifts to the right and the equilibrium interest rate falls.

11. Interest rates would rise. A sudden increase in people's expectations of future real estate prices raises the expected return on real estate relative to bonds, so the demand for bonds falls. The demand curve B^d shifts to the left, bond prices fall, and the equilibrium interest rate rises.

12. Interest rates might rise. The large federal deficits require the Treasury to issue more bonds; thus the supply of bonds increases. The supply curve, B^s, shifts to the right and the equilibrium interest rate rises. Some economists believe that when the Treasury issues more bonds, the demand for bonds increases because the issue of bonds increases the public's wealth. In this case, the demand curve, B^d, also shifts to the right, and it is no longer clear that the equilibrium interest rate will rise. Thus there is some ambiguity in the answer to this question.

13. In the bond supply and demand analysis, the increased riskiness of bonds lowers the demand for bonds. The demand curve B^d shifts to the left, and the equilibrium interest rate rises. The same answer is found in the liquidity preference framework. The increased riskiness of bonds relative to money increases the demand for money. The money demand curve M^d shifts to the right, and the equilibrium interest rate rises.

14. The price level effect has its maximum impact by the end of the first year, and since the price level does not fall further, interest rates will not fall further as a result of a price level effect. On the other hand, expected inflation returns to zero in the second year, so that the expected inflation effect returns to zero. One factor producing lower interest rates thus disappears, so, in the second year, interest rates may rise somewhat from their low point at the end of the second year.

15. Yes, interest rates will rise. The lower commission on stocks makes them more liquid than bonds, and the demand for bonds will fall. The demand curve B^d will therefore shift to the left, and the equilibrium interest rate will rise.

16. If the public believes the president's program will be successful, interest rates will fall. The president's announcement will lower expected inflation so that the expected return on goods decreases relative to bonds. The demand for bonds increases and the demand curve, B^d, shifts to the right. For a given nominal interest rate, the lower expected inflation means that the real interest rate has risen, raising the cost of borrowing so that the supply of bonds falls. The resulting leftward shift of the supply curve, B^s, and the rightward shift of the demand curve, B^d, causes the equilibrium interest rate to fall.

17. The interest rate on the AT&T bonds will rise. Because people now expect interest rates to rise, the expected return on long-term bonds such as the 8 1/8s of 2022 will fall, and the demand for these bonds will decline. The demand curve B^d will therefore shift to the left, the price will fall, and the equilibrium interest rate will rise.

18. Interest rates will rise. The expected increase in stock prices raises the expected return on stocks relative to bonds and so the demand for bonds falls. The demand curve, B^d, shifts to the left and the equilibrium interest rate rises.

19. Interest rates will rise. When bond prices become volatile and bonds become riskier, the demand for bonds will fall. The demand curve B^d will shift to the left, the price will fall, and the equilibrium interest rate will rise.

20. The slower rate of money growth will lead to a liquidity effect, which raises interest rates, while the lower price level, income, and inflation rates in the future will tend to lower interest rates. There are three possible scenarios for what will happen: (a) if the liquidity effect is larger than the other effects, then interest rates will rise; (b) if the liquidity effect is smaller than the other effects and expected inflation adjusts slowly, then interest rates will rise at first but will eventually fall below their initial level; and (c) if the liquidity effect is smaller than the expected inflation effect and there is rapid adjustment of expected inflation, then interest rates will immediately fall.

Chapter 6
The Risk and Term Structure of Interest Rates

1. The bond with a *C* rating should have a higher interest rate because it has a higher default risk, which reduces its demand and raises its interest rate relative to that on the Baa bond.

2. U.S Treasury bills have lower default risk and more liquidity than negotiable CDs. Consequently, the demand for Treasury bills is higher, and they have a lower interest rate.

3. During business cycle booms, fewer corporations go bankrupt and there is less default risk on corporate bonds, which lowers their risk premium. Similarly, during recessions, default risk on corporate bonds increases and their risk premium increases. The risk premium on corporate bonds is thus anticyclical, rising during recessions and falling during booms.

4. True. When bonds of different maturities are close substitutes, a rise in interest rates for one bond causes the interest rates for others to rise because the expected returns on bonds of different maturities cannot get too far out of line.

5. If yield curves on average were flat, this would suggest that the risk premium on long-term relative to short-term bonds would equal zero and we would be more willing to accept the expectations hypothesis.

6. (a) The yield to maturity would be 5% for a one-year bond, 6% for a two-year bond, 6.22% for a three-year bond, 6.5% for a four-year bond, and 6.6% for a five-year bond. (b) The yield to maturity would be 5% for a one-year bond, 4.5% for a two-year bond. 4.33% for a three-year bond, 4.25% for a four-year bond, and 4.2% for a five-year bond. The upward sloping yield curve in (a) would be even steeper if people preferred short-term bonds over long-term bonds, because long-term bonds would then have a positive liquidity premium. The downward-sloping yield curve in (b) would be less steep and might have a slight positive upward slope if the long-term bonds have a positive liquidity premium.

7. (a) The yield to maturity would be 5 percent for a one-year bond, 5.5 percent for a two-year bond, 6 percent for a three-year bond, 6 percent for a four-year bond, and 5.8 percent for a five-year bond; (b) the yield to maturity would be 5 percent for a one-year bond, 4.5 percent for a two-year bond, 4 percent for a three-year bond, 4 percent for a four-year bond, and 4.2 percent for a five-year bond. The upward- and then downward-sloping yield curve in (a) would tend to be even more upward sloping if people preferred short-term bonds over long-term bonds because long-term bonds would then have a positive risk premium. The downward- and then upward-sloping yield curve in (b) also would tend to be more upward sloping because of the positive risk premium for long-term bonds.

8. The flat yield curve at shorter maturities suggests that short-term interest rates are expected to fall moderately in the near future, while the steep upwards slope of the yield curve at longer maturities indicates that interest rates further into the future are expected to rise. Because interest rates and expected inflation move together, the yield curve suggests that the market expects inflation to fall moderately in the near future but to rise later on.

9. The steep upward-sloping yield curve at shorter maturities suggests that short-term interest rates are expected to rise moderately in the near future because the initial, steep upward slope indicates that the average of expected short-term interest rates in the near future are above the current short-term interest rate. The downward slope for longer maturities indicates that short-term interest rates are eventually expected to fall sharply. With a positive risk premium on long-term bonds, as in the preferred habitat theory, a downward slope of the yield curve occurs only if the average of expected short-term interest rates is declining, which occurs only if short-term interest rates far into the future are falling. Since interest rates and expected inflation move together, the yield curve suggests that the market expects inflation to rise moderately in the near future but fall later on.

10. The reduction in income tax rates would make the tax-exempt privilege for municipal bonds less valuable, and they would be less desirable than taxable Treasury bonds. The resulting decline in the demand for municipal bonds and increase in demand for Treasury bonds would raise interest rates on municipal bonds while causing interest rates on Treasury bonds to fall.

11. The government guarantee will reduce the default risk on corporate bonds, making them more desirable relative to Treasury securities. The increased demand for corporate bonds and decreased demand for Treasury securities will lower interest rates on corporate bonds and raise them on Treasury bonds.

12. Lower brokerage commissions for corporate bonds would make them more liquid and thus increase their demand, which would lower their risk premium.

13. Abolishing the tax-exempt feature of municipal bonds would make them less desirable relative to Treasury bonds. The resulting decline in the demand for municipal bonds and increase in demand for Treasury bonds would raise the interest rates on municipal bonds, while the interest rates on Treasury bonds would fall.

14. You would raise your predictions of future interest rates, because the higher long-term rates imply that the average of the expected future short-term rates is higher.

15. The slope of the yield curve would fall because the drop in expected future short rates means that the average of expected future short rates falls so that the long rate falls.

Chapter 7
The Stock Market, the Theory of Rational Expectations, and the Efficient Market Hypothesis

1. The value of any investment is found by computing the value today of all cash flows the investment will generate over its life.

2. There are two cash flows from stock, periodic dividends and a future sales price. Dividends are frequently changed when firm earnings either rise or fall. The future sales price is also difficult to estimate, because it depends on the dividends that will be paid at some date even further in the future. Bond cash flows also consist of two parts, periodic interest payments and a final maturity payment. These payments are established in writing at the time the bonds are issued and cannot be changed without the firm defaulting and being subject to bankruptcy. Stock prices tend to be more volatile, because their cash flows are more subject to change.

3. $\$1/(1 + 0.15) + \$20/(1 + 0.15) = \$18.26$

4. $P_0 = \$3 \times (1.07)/0.18 - 0.07 = \$29.18$

5. A stock market bubble can occur if market participants either believe that dividends will have rapid growth or if they substantially lower the required return on their equity investments, thus lowering the denominator in the Gordon model and thereby causing stock prices to climb. By raising interest rates the central bank can cause the required rate of return on equity to rise, thereby keeping stock prices from climbing as much. Also raising interest rates may help slow the expected growth rate of the economy and hence of dividends, thus also keeping stock prices from climbing.

6. False. Expectations can be highly inaccurate and still be rational, because optimal forecasts are not necessarily accurate: A forecast is optimal if it is the best possible even if the forecast errors are large.

7. Although Joe's expectations are typically quite accurate, they could still be improved by his taking account of a snowfall in his forecasts. Since his expectations could be improved, they are not optimal and hence are not rational expectations.

8. No, because he could improve the accuracy of his forecasts by predicting that tomorrow's interest rates will be identical to today's. His forecasts are therefore not optimal, and he does not have rational expectations.

9. True, as an approximation. If large changes in a stock price could be predicted, then the optimal forecast of the stock return would not equal the equilibrium return for that stock. In this case, there would be unexploited profit opportunities in the market and expectations would not be rational. Very small changes in stock prices could be predictable, however, and the optimal forecast of returns would equal the equilibrium return. In this case, an unexploited profit opportunity would not exist.

10. No, you shouldn't buy stocks, because the rise in the money supply is publicly available information that will be already incorporated into stock prices. Hence you cannot expect to earn more than the equilibrium return on stocks by acting on the money supply information.

11. The stock price will rise. Even though the company is suffering a loss, the price of the stock reflects an even larger expected loss. When the loss is less than expected, efficient markets theory then indicates that the stock price will rise.

12. No, because this is publicly available information and is already reflected in stock prices. The optimal forecast of stock returns will equal the equilibrium return, so there is no benefit from selling your stocks.

13. Probably not. Although your broker has done well in the past, efficient markets theory suggests that she has probably been lucky. Unless you believe that your broker has better information than the rest of the market, efficient markets theory indicates that you cannot expect the broker to beat the market in the future.

14. No, if the person has no better information than the rest of the market. An expected price rise of 10% over the next month implies over a 100% annual return on Google stock, which certainly exceeds its equilibrium return. This would mean that there is an unexploited profit opportunity in the market, which would have been eliminated in an efficient market. The only time that the person's expectations could be rational is if the person had information unavailable to the market that allowed him or her to beat the market.

15. False. All that is required for the market to be efficient so that prices reflect information on the monetary aggregates is that some market participants eliminate unexploited profit opportunities. Not everyone in a market has to be knowledgeable for the market to be efficient.

16. False. The people with better information are exactly those who make the market more efficient by eliminating unexploited profit opportunities. These people can profit from their better information.

17. Because inflation is less than expected, expectations of future short-term interest rates would be lowered, and as we learned in Chapter 7, long-term interest rates would fall. The decline in long-term interest rates implies that long-term bond prices would rise.

18. True, in principle. Foreign exchange rates are a random walk over a short interval such as a week, because changes in the exchange rate are unpredictable; if a change were predictable, large unexploited profit opportunities would exists in the foreign exchange market. If the foreign exchange market is efficient, these unexploited profit opportunities cannot exist and so the foreign exchange rate will approximately follow a random walk.

19. No, because this expected change in the value of the dollar would imply that there is a huge unexploited profit opportunity (over a 100% expected return at an annual rate). Since rational expectations rules out unexploited profit opportunities, such a big expected change in the exchange rate could not exist.

20. False. Although human fear may be the source of stock market crashes, that does not imply that there are unexploited profit opportunities in the market. Nothing in rational expectations theory rules out large changes in stock prices as a result of fears on the part of the investing public.

Chapter 8
An Economic Analysis of Financial Structure

1. Financial intermediaries can take advantage of economies of scale and thus lower transactions costs. For example, mutual funds take advantage of lower commissions because the scale of their purchases is higher than for an individual, while banks' large scale allows them to keep legal and computing costs per transaction low. Economies of scale which help financial intermediaries lower transactions costs explains why financial intermediaries exist and are so important to the economy.

2. Financial intermediaries develop expertise in such areas as computer technology so that they can inexpensively provide liquidity services such as checking accounts that lower transactions costs for depositors. Financial intermediaries can also take advantage of economies of scale and engage in large transactions that have a lower cost per dollar of transaction.

3. No. If the lender knows as much about the borrower as the borrower does, then the lender is able to screen out the good from the bad credit risks and so adverse selection will not be a problem. Similarly, if the lender knows what the borrower is up to, then moral hazard will not be a problem because the lender can easily stop the borrower from engaging in moral hazard.

4. Standard accounting principles make profit verification easier, thereby reducing adverse selection and moral hazard problems in financial markets, hence making them operate better. Standard accounting principles make it easier for investors to screen out good firms from bad firms, thereby reducing the adverse selection problem in financial markets. In addition, they make it harder for mangers to understate profits, thereby reducing the principal-agent (moral hazard) problem.

5. The lemons problem would be less severe for firms listed on the New York Stock Exchange because they are typically larger corporations that are better known in the market place. Therefore it is easier for investors to get information about them and figure out whether the firm is of good quality or is a lemon. This makes the adverse selection–lemons problem less severe.

6. Smaller firms that are not well known are the most likely to use bank financing. Because it is harder for investors to acquire information about these firms, it will be hard for the firms to sell securities in the financial markets. Banks that specialize in collecting information about smaller firms will then be the only outlet these firms have for financing their activities.

7. Because there is asymmetric information and the free-rider problem, not enough information is available in financial markets. Thus there is a rationale for the government to encourage information production through regulation so that it is easier to screen out good from bad borrowers, thereby reducing the adverse selection problem. The government can also help reduce moral hazard and improve the performance of financial markets by enforcing standard accounting principles and prosecuting fraud.

8. Yes. The person who is putting her life savings into her business has more to lose if she takes on too much risk or engages in personally beneficial activities that don't lead to higher profits. So she will act more in the interest of the lender, making it more likely that the loan will be paid off.

9. Yes, this is an example of an adverse selection problem. Because a person is rich, the people who are most likely to want to marry him or her are gold diggers. Rich people thus may want to be extra careful to screen out those who are just interested in their money from those who want to marry for love.

10. True. If the borrower turns out to be a bad credit risk and goes broke, the lender loses less, because the collateral can be sold to make up any losses on the loan. Thus adverse selection is not as severe a problem.

11. The free-rider problem means that private producers of information will not obtain the full benefit of their information-producing activities, and so less information will be produced. This means that there will be less information collected to screen out good from bad risks, making adverse selection problems worse, and that there will be less monitoring of borrowers, increasing the moral hazard problem.

12. The separation of ownership and control creates a principal-agent problem. The mangers (the agents) do not have as strong an incentive to maximize profits as the owners (the principals). Thus the managers might not work hard, might engage in wasteful spending on personal perks, or might pursue business strategies that enhance their personal power but do not increase profits.

13. Because one information resource can be used in providing the several services, thus lowering the cost for each.

14. Conflicts of interest arise because higher profits might arise in providing one kind of service if the provider misuses information, provides false information, or conceals information when providing another kind of service.

15. Conflicts of interest lead to a substantial reduction in the quality of information so that asymmetric information problems become worse, which prevents financial markets from channeling funds into productive investment opportunities. The result is that financial markets become less efficient.

16. (1) Research analysts in investment banks might distort their research to please issuers of securities so underwriters in the investment bank can get their business. (2) Investment banks might engage in spinning, a form of kickback in which they allocate hot, but underpriced IPOs to executives in return for their companies' future business.

17. Spinning makes financial markets less efficient because it might influence executives not to use the lowest-cost investment bank when issuing securities. The result would be a higher cost of capital and hence lower efficiency.

18. (1) Clients may be able to pressure auditors into skewing their opinions in order to get fees for other accounting services. (2) Auditors may be auditing information systems or structuring (tax and financial) advice put in place by their non-audit counterparts within the firm, and thus may be reluctant to criticize this advice or systems. (3) Auditors may provide overly favorable opinions in order to solicit or retain business.

19. Sarbanes-Oxley requires CEOs and CFOs to certify the financial statements and disclosures of the firm and requires disclosure of off-balance sheet transactions and relationships with special purpose entities. This mandatory disclosure improves the quality of information, but has the disadvantage of being costly. Sarbanes-Oxley also substantially increases supervisory oversight with the PCAOB which can help stop conflicts of interest in the accounting industry. Also by making the audit committee independent of management, audits are likely to be more reliable, an important benefit. However, Sarbanes-Oxley may reduce economies of scope available to accounting firms by preventing them from providing auditing and consulting services to the same client.

20. The Global Settlement has increased disclosure of analysts' recommendations, which also help increase information in financial markets. Also, it requires increased disclosure of potential conflicts of interest, which can help the market to constrain them. The Global Settlement bans spinning, which might otherwise encourage executives to choose high-cost investment banks to underwrite their securities: banning spinning makes it more likely that lower-cost and more efficient underwriting will take place. The fines imposed by the Global Settlement also provide incentives for investment banks to avoid exploiting conflicts of interest in the future. The negative side of the Global Settlement is that it separates activities and so may mean that economies of scope in information production are lost. The Global Settlement also requires that part of the $1.4 billion fine be used to fund independent research, but it is not clear that quality of this research will be high.

Chapter 9
Financial Crises and the Subprime Meltdown

1. When an asset-price bubble bursts and asset prices realign with fundamental economic values, the resulting decline in net worth means that businesses have less skin in the game and so have incentives to take on risk at the lender's expense. In addition, lower net worth means there is less collateral and so adverse selection increases. The bursting of an asset-price bubble therefore makes borrowers less credit-worthy and causes a contraction in lending and spending. The asset price bust can also lead to a deterioration in financial institutions' balance sheets, which causes them to deleverage, further contributing to the decline in lending and economic activity.

2. An unanticipated decline in the price level leads to firms real burden of indebtedness increasing while there is no increase in the real value of their assets. The resulting decline in a firm's net worth increases adverse selection and moral hazard problems facing lenders, making it more likely a financial crisis will occur in which financial markets do not work efficiently to get funds to firms with productive investment opportunities.

3. With debt contracts denominated in foreign currency, when there is an unanticipated decline in the value of the domestic currency, the debt burden of domestic firms increases. Since assets are typically denominated in domestic currency, there is a resulting deterioration in firms' balance sheets and a decline in net worth, which then increases adverse selection and moral hazard problems. The increase in asymmetric information problems leads to a decline in investment and economic activity.

4. A decline in real estate prices lowers the net worth of households or firms that are holding real estate assets. The resulting decline in net worth means that businesses have less at risk and so have incentives to take on risk at the lender's expense. In addition, lower net worth means there is less collateral and so adverse selection increases. The decline in real estate prices can thus make borrowers less credit-worthy and cause a contraction in lending and spending. The real estate decline can also lead to a deterioration in financial institutions' balance sheets, which causes them to deleverage, further contributing to the decline in lending and economic activity.

5. If financial institutions suffer a deterioration in their balance sheets and they have a substantial contraction in their capital, they will have fewer resources to lend, and lending will decline. The contraction in lending then leads to a decline in investment spending, which slows economic activity. When there are simultaneous failures of financial institutions, there is a loss of information production in financial markets and a direct loss of banks' financial intermediation. In addition, a decrease in bank lending during a banking crisis decreases the supply of funds available to borrowers, which leads to higher interest rates, which increases asymmetric information problems and leads to a further contraction in lending and economic activity.

6. A failure of a major financial institution, which leads to a dramatic increase in uncertainty in financial markets, makes it hard for lenders to screen good from bad credit risks. The resulting inability of lenders to solve the adverse selection problem makes them less willing to lend, which leads to a decline in lending, investment, and aggregate economic activity.

7. As we saw in Chapter 8, individuals and firms with the riskiest investment projects are those who are willing to pay the highest interest rates. If increased demand for credit or a decline in the money supply market drives up interest rates sufficiently, good credit risks are less likely to want to borrow while bad credit risks are still willing to borrow. Because of the resulting increase in adverse selection, lenders will no longer want to make loans. The substantial decline in lending will lead to a substantial decline in investment and aggregate economic activity. Increases in interest rates also play a role in promoting a financial crisis through their effect on cash flow, the difference between cash receipts and expenditure. A firm with sufficient cash flow can finance its projects internally, and there is no asymmetric information because it knows how good its own projects are. An increase in interest rates, and therefore in household and firm interest payments, decreases their cash flow. With less cash flow, the firm has fewer internal funds and must raise funds from an external source, say, a bank, which does not know the firm as well as its owners or managers. Because of this increased adverse selection and moral hazard, the bank may choose not to lend even firms with good risks the money to undertake potentially profitable investments. Thus when cash flow drops as a result of an increase in interest rates, adverse selection and moral hazard problems become more severe, again curtailing lending, investment, and economic activity.

8. Government fiscal imbalances may create fears of default on government debt. As a result, demand from individual investors for the government bonds may fall, causing the government to force financial institutions to purchase them. If the debt then declines in price, as will occur if a government default is likely—financial institutions' balance sheets will weaken and their lending will contract for the reasons described earlier. Fears of default on the government debt can also spark a foreign exchange crisis in which the value of the domestic currency falls sharply because investors pull their money out of the country. The decline in the domestic currency's value will then lead to the destruction of the balance sheets of firms with large amounts of debt denominated in foreign currency. These balance sheet problems lead to an increase in adverse selection and moral hazard problems, a decline in lending, and a contraction of economic activity.

9. With restrictions lifted or new financial products, financial institutions often go on a lending spree and expand their lending at a rapid pace. Unfortunately, the managers of these financial institutions may not have the expertise to manage risk appropriately in these new lines of business, leading to overly risky lending. In addition, regulation and government supervision may not keep up with the new activities, further leading to excessive risk taking. When loans eventually go sour, this causes a deterioration in financial institution balance sheets, a decrease in lending and therefore a decrease in economic activity.

10. Weak regulation and supervision mean that financial institutions will take on excessive risk because market discipline is weakened by the existence of a government safety net. When the risky loans eventually go sour, this causes a deterioration in financial institution balance sheets, which then means that these institutions cut back lending and economic activity declines.

11. Because they have debt that is long term, when the price level falls, it increases real indebtedness, lowering net worth and increasing adverse selection and moral hazard problems. In emerging market countries, debt is very short-term so that a decline in the price level does not raise real indebtedness very much because the debt is repriced so frequently.

12. The use of data mining to give households numerical credit scores which can be used to predict defaults and the use of computer technology to bundle together many small mortgage loans cheaply and package them into securities. Together both enable the origination of subprime mortgages, which then can be sold off as securities.

13. Because the agent for the investor, the mortgage originator, has little incentive to make sure that the mortgage is a good credit risk.

14. False. Financial engineering may create financial products that are so complex that it can be hard to value the cash flows of the underlying assets for a security or to determine who actually owns these assets. In other words, the increased complexity of structured products can actually destroy information, thereby making asymmetric information worse in the financial system and increasing the severity of adverse selection and moral hazard problems.

15. The decline in housing prices led to many subprime borrowers finding that their mortgages were "underwater." When this happened, struggling homeowners had tremendous incentives to walk away from their homes and just send the keys back to the lender. Defaults on mortgages shot up sharply, causing losses to financial institutions which then deleveraged, causing a collapse in lending.

16. Capital flows from abroad can fuel a credit boom and excessive risk taking. When the credit boom bursts, there is a deterioration of financial institution balance sheets, which causes a contraction of lending and economic activity.

17. Regulation and supervision end up being weak because powerful domestic business interests want it that way so they can take more risk, allowing them to earn higher returns but pass off the losses to the taxpayer if the loans go sour.

18. Because liability dollarization means that when there is a currency crisis and the currency collapses, indebtedness in terms of domestic currency increases, leading to borrowers from banks not being able to pay back loans. The resulting loan losses at banks cause them to fail, creating a banking crisis. Hence a currency crisis and a banking crisis go hand in hand.

19. The central banks in most emerging market countries have little credibility as inflation fighters. Thus, a sharp depreciation of the currency after a currency crisis leads to immediate upward pressure on import prices. A dramatic rise in both actual and expected inflation will likely follow, and hence interest rates will rise.

20. When the banking system is in trouble, the government and central bank are now between a rock and a hard place: If they raise interest rates too much, they will destroy their already weakened banks, and if they don't, they can't maintain the value of their currency. Once markets recognize this, they know that the government can't defend its currency so they have a one-way bet and pile on, selling the currency, leading to a speculative attack and a currency crisis.

Chapter 10
Banking and the Management of Financial Institutions

1. Because if the bank borrows too frequently from the Fed, the Fed may restrict its ability to borrow in the future.

2. The rank from most to least liquid is (c), (b), (a), (d).

3. The T-accounts for the two banks are as follows:

First National Bank

Assets		Liabilities	
Reserves	−$50	Checkable Deposits	−$50

Second National Bank

Assets		Liabilities	
Reserves	+$50	Checkable Deposits	+$50

4. Reserves drop by $500. The T-account for the first National Bank is as follows:

First National Bank

Assets		Liabilities	
Reserves	−$500	Checkable Deposits	−$500

5. The $50 million deposit outflow means that reserves fall by $50 million to $25 million. Since required reserves are $45 million (10 percent of the $450 million of deposits), your bank needs to acquire $20 million of reserves. You could obtain these reserves by either calling in or selling off $20 million of loans, by borrowing $20 million in discount loans from the Fed, by borrowing $20 million from other banks or corporations, by selling $20 million of securities, or by some combination of all of these.

6. The bank would rather have the balance sheet shown in this problem, because after it loses $50 million due to deposit outflow, the bank would still have excess reserves of $5 million: $50 million in reserves minus required reserves of $45 million (10% of the $450 million of deposits). Thus the bank would not have to alter its balance sheet further and would not incur any costs as a result of the deposit outflow. By contrast, with the balance sheet in Problem 5, the bank would have a shortfall of reserves of $20 million ($25 million in reserves minus the required reserves of $45 million). In this case, the bank will incur costs when it raises the necessary reserves through the methods described in the text.

7. Because when a deposit outflow occurs, a bank is able to borrow reserves in these overnight loan markets quickly; thus, it does not need to acquire reserves at a high cost by calling in or selling off loans. The presence of overnight loan markets thus reduces the costs associated with deposit outflows, so banks will hold fewer excess reserves.

8. No. When you turn a customer down, you may lose that customer's business forever, which is extremely costly. Instead, you might go out and borrow from other banks, corporations, or the Fed to obtain funds so that you can make the customer loans. Alternatively, you might sell negotiable CDs or some of your securities to acquire the necessary funds.

9. To lower capital and raise *ROE* holding its assets constant, it can pay out more dividends or buy back some of its shares. Alternatively, it can keep its capital constant, but increase the amount of its assets by acquiring new funds and then seeking out new loan business or purchasing more securities with these new funds.

10. It can raise $1 million of capital by issuing new stock. It can cut its dividend payments by $1 million, thereby increasing its retained earnings by $1 million. It can decrease the amount of its assets so that the amount of its capital relative to its assets increases, thereby meeting the capital requirements.

11. In order for a banker to reduce adverse selection she must screen out good from bad credit risks by learning all she can about potential borrowers. Similarly in order to minimize moral hazard, she must continually monitor borrowers to ensure that they are complying with restrictive loan covenants. Hence it pays for the banker to be nosy.

12. Compensating balances can act as collateral. They also help establish long-term customer relationships, which make it easier for the bank to collect information about prospective borrowers, thus reducing the adverse selection problem. Compensating balances help the bank monitor the activities of a borrowing firm so that it can prevent the firm from taking on too much risk, thereby not acting in the interest of the bank.

13. False. Although diversification is a desirable strategy for a bank, it may still make sense for a bank to specialize in certain types of lending. For example, a bank may have developed expertise in screening and monitoring a particular kind of loan, thus improving its ability to handle problems of adverse selection and moral hazard.

14. The assets fall in value by $8 million (= $100 million $\times -2\% \times$ 4 years) while the liabilities fall in value by $10.8 million (= $90 million $\times -2\% \times$ 6 years). Because the liabilities fall in value by $2.8 million more than the assets do, the net worth of the bank rises by $2.8 million. The interest-rate risk can be reduced by shortening the maturity of the liabilities to a duration of four years or lengthening the maturity of the assets to a duration of six years. Alternatively, you could engage in an interest-rate swap, in which you swap the interest earned on your assets with the interest on another bank's assets that have a duration of six years.

15. The gap is $10 million ($30 million of rate-sensitive assets minus $20 million of rate-sensitive liabilities). The change in bank profits from the interest rate rise is + $0.5 million (5% $\times$ $10 million); the interest rate risk can be reduced by increasing rate-sensitive liabilities to $30 million or by reducing rate-sensitive assets to $20 million. Alternatively, you could engage in an interest rate swap in which you swap the interest on $10 million of rate-sensitive assets for the interest on another bank's $10 million of fixed-rate assets.

Chapter 11
Economic Analysis of Financial Regulation

2. There would be adverse selection, because people who might want to burn their property for some personal gain would actively try to obtain substantial fire insurance policies. Moral hazard could also be a problem, because a person with a fire insurance policy has less incentive to take measures to prevent fire.

3. Chartering banks is the bank regulation that helps reduce the adverse selection problem because it attempts to screen proposals for new banks to prevent risk-prone entrepreneurs and crooks from controlling them. It will not always work because risk-prone entrepreneurs and crooks have incentives to hide their true nature and thus may slip through the chartering process.

4. Regulations that restrict banks from holding risky assets directly decrease the moral hazard of risk taking by the bank. Requirements that force banks to have a large amount of capital also decrease the banks' incentives for risk taking, because banks now have more to lose if they fail. Such regulations will not completely eliminate the moral hazard problem, because bankers have incentives to hide their holdings of risky assets from the regulators and to overstate the amount of their capital.

5. The benefits of a too-big-to-fail policy are that it makes bank panics less likely. The costs are that it increases the incentives or moral hazard by big banks who know that depositors do not have incentives to monitor the bank's risk-taking activities. In addition, it is an unfair policy because it discriminates against small banks.

6. The S&L crisis did not occur until the 1980s, because interest rates stayed low before then, so S&Ls were not subjected to losses from high interest rates. Also, the opportunities for risk taking were not available until the 1980s, when legislation and financial innovation made it easier for S&Ls to take on more risk, thereby greatly increasing the adverse selection and moral hazard problem.

7. Regulatory forbearance is a dangerous strategy because once a bank is insolvent it has even stronger incentives to commit moral hazard and take on excessive risk. It has little to lose if its risky activities go sour, but has a lot to gain if the risky activities pay off. The resulting excessive risk-taking makes it more likely that the deposit insurance agency will suffer large losses.

8. FIRREA provided funds for the S&L bailout, created the Resolution Trust Corporation to manage the resolution of insolvent thrifts, eliminated the Federal Home Loan Bank Board and gave its regulatory role to the Office of Thrift Supervision, eliminated the FSLIC and turned its insurance role and regulatory responsibilities over to the FDIC, imposed restrictions on thrift activities similar to those in effect before 1982, increased the capital requirements to those adhered to by commercial banks, and increased the enforcement powers of thrift regulators.

9. The Bank Insurance Fund of the FDIC was recapitalized by allowing it to borrow more from the Treasury and by raising insurance premiums. The bill reduced the scope of deposit insurance by limiting brokered deposits and by limiting the too-big-to-fail doctrine by forcing the FDIC to use the least-cost method of closing failed banks except under unusual circumstances. The bill has prompt corrective action provisions that require the FDIC to intervene earlier with stronger actions when banks move into one of the weaker of the five classifications based on bank capital. The limiting of deposit insurance and prompt corrective action should reduce moral hazard risk-taking on the part

of banks. The bill instructs the FDIC to come up with risk-based premiums which will increase the premium cost when the banks take on more risk, thus helping to reduce the moral hazard problem. The bill also mandates increased reporting requirements and annual examinations to prevent the banks from taking on too much risk. It also enhances regulation of foreign banks in the U.S. to keep them from operating in the U.S. if they are taking on too much risk.

10. If political candidates receive campaign funds from the government and are restricted in the amount they spend, they will have less need to satisfy lobbyists to win elections. As a result, they may have greater incentives to act in the interest of taxpayers (the principals), and so the political process might improve.

11. The S&L crisis can be blamed on the principal-agent problem because politicians and regulators (the agents) have not had the same incentives to minimize costs of deposit insurance as do the taxpayers (the principals). As a result, politicians and regulators relaxed capital standards, removed restrictions on holdings of risky assets, and engaged in regulatory forbearance, thereby increasing the cost of the S&L bailout.

12. Eliminating or limiting the amount of deposit insurance would help reduce the moral hazard of excessive risk taking on the part of banks. It would, however, make banks failures and panics more likely, so it might not be a very good idea.

13. In general, yes. A national banking system will enable banks to diversify their loan portfolios better, thus decreasing the likelihood of bank failures. In addition, it may make banks and hence the economy more efficient and will help increase banks' profitability which will make them healthier.

14. The economy would benefit from reduced moral hazard; that is, banks would not want to take on too much risk, because doing so would increase their deposit insurance premiums. The problem is however, that it is difficult to monitor the degree of risk in bank assets because often only the bank making the loans knows how risky they are.

15. The FDIC must now close banks by the least costly method, thus making it far more likely that uninsured depositors will suffer losses. As a result, depositors have a greater incentive to monitor big banks and pull out their money if the bank is taking on too much risk. As a result, large banks will have less incentives to take on risk, thereby making the banking system safer and sounder and reducing the probability of future banking crises.

Chapter 12
Banking Industry: Structure and Competition

1. Agricultural and other interests in the U.S. were quite suspicious of centralized power and thus opposed the creation of a central bank.

2. (a) Office of the Comptroller of the Currency; (b) the Federal Reserve; (c) state banking authorities and the FDIC; (d) the Federal Reserve

3. False. Although there are many more banks in the United States than in Canada, this does not mean that the American banking system is more competitive. The reason for the large number of U.S. banks is anticompetitive regulations such as restrictions on banking.

4. New technologies such as electronic banking facilities are frequently shared by several banks, so these facilities are not classified as branches. Thus they can be used by banks to escape limitations on offering services in other states and, in effect, to escape limitations from restrictions on branching.

5. Because becoming a bank holding company allows a bank to: (1) circumvent branching restrictions since it can own a controlling interest in several banks even if branching is not permitted, and (2) engage in other activities related to banking that can be highly profitable.

6. Because restrictions on branching are stricter for commercial banks than for savings and loans. Thus small commercial banks have greater protection from competition and are more likely to survive than small savings and loans.

7. Credit unions are small because they only have members who share a common employer or are associated with a particular organization.

8. International banking has been encouraged by giving special tax treatment and relaxed branching regulations to Edge Act corporations and to international banking facilities (IBFs); this was done to make American banks more competitive with foreign banks. The hope is that it will create more banking jobs in the United States.

9. IBFs encourage American and foreign banks to do more banking business in the United States, thus shifting employment from Europe to the United States.

10. No, because the Saudi-owned bank is subject to the same regulations as the American-owned bank.

11. The facts that banks' importance as a source of total credit advanced has shrunk, bank profitability as measured by *ROA* and *ROE* has declined, and bank failures have been running at much higher rates starting in the 1980s.

12. The rise in inflation and the resulting higher interest rates on alternatives to checkable deposits meant that banks had a big shrinkage in this low-cost way of raising funds. The innovation of money market mutual funds also meant that the banks lost checking account business. The abolishment of Regulation *Q* and the appearance of *NOW* accounts did help decrease disintermediation, but raised the cost of funds for American banks, which now had to pay higher interest rates on checkable and other deposits. Foreign banks were also able to tap a large pool of domestic savings, thereby lowering their cost of funds relative to American banks.

13. True. Higher inflation helped raise interest rates which caused the disintermediation process to occur and helped create money market mutual funds. As a result, banks lost cost advantages on the liabilities side of their balance sheets, leading to a less healthy banking industry. However, improved information technology would still have eroded the banks' income advantages on the assets side of their balance sheet, so the decline in the banking industry would still have occurred.

14. The growth of the commercial paper market and the development of the junk bond market meant that corporations were now able to issue securities rather than borrow from banks, thus eroding the competitive advantage of banks on the lending side. Securitization has enabled other financial institutions to originate loans, again taking away some of the banks' loan business.

15. Uncertain. The invention of the computer did help lower transaction costs and the costs of collecting information, both of which have made other financial institutions more competitive with banks and have allowed corporations to bypass banks and borrow directly from securities markets. Therefore, computers were an important factor in the decline of the banking system. However, another source of the decline in the banking industry was the loss of cost advantages for the banks in acquiring funds, and this loss was due to factors unrelated to the invention of the computer, such as the rise in inflation and its interaction with regulations which produced disintermediation.

Chapter 13
Central Banks and the Federal Reserve System

1. Because of traditional American hostility to a central bank and centralized authority, the system of 12 regional banks was set up to diffuse power along regional lines.

2. The placement of two banks in the Midwest farm belt might have been engineered to placate farmers, an important voting block in the early twentieth century.

3. Like the U.S. Constitution, the Federal Reserve System, originally established by the Federal Reserve Act, has many checks and balances and is a peculiarly American institution. The ability of the twelve regional banks to affect discount policy was viewed as a check on the centralized power of the Board of Governors, just as states' rights are a check on the centralized power of the federal government. The provision that there be three types of directors (*A*, *B*, and *C*) representing different groups (professional bankers, business people, and the public) was again intended to prevent any group from dominating the Fed. The Fed's independence from the federal government and the setting up of the Federal Reserve banks as incorporated institutions were further intended to restrict government power over the banking industry.

4. The Federal Reserve Banks influence the conduct of monetary policy through their administration of the discount facilities at each bank and by having five of their presidents sit on the FOMC, the main policymaking arm of the Fed.

5. The Board of Governors sets reserve requirements and the discount rate; the FOMC directs open market operations. In practice however, the FOMC helps make decisions about reserve requirements and the discount rate.

6. The 14-year terms do not completely insulate the governors from political influence. The governors know that their bureaucratic power can be reined in by congressional legislation and so must still curry favor with both Congress and the President. Moreover, in order to gain additional power to regulate the financial system, the governors need the support of Congress and the President to pass favorable legislation.

7. The structure of the European System of Central Banks (ECSB) is similar to that of the Federal Reserve: the National Central Banks (NCBs) have a similar role to the Federal Reserve Banks and the Executive Board is similar to the board of Governors. The Governing Council has a similar role to the FOMC, and its voting members include the presidents of the NCBs and the Executive Board members, just as the FOMC has as its voting members Federal Reserve Bank presidents and members of the Board of Governors. There are some differences however. First, the budgets of the Federal Reserve Banks are controlled by the Board of Governors, while the NCBs control their own budgets and the budget of the ECB in Frankfurt. Second, the monetary operations of the Eurosystem are conducted by the NCBs in each country, so monetary operations are not centralized as they are in the Federal Reserve System. Third, in contrast to the Fed, the ECB is not involved in supervision and regulation of financial institutions. The ECSB is more independent than the Fed because its charter can only be changed by revision of the Maastricht Treaty, a very difficult process because all signatories to the treaty must agree to accept any proposed change, while the Fed's charter can be changed by legislation which is much easier to do. On the other hand, the goal for the ECSB is more clearly specified than it is for the Fed because the Maastricht Treaty states that the overriding long-run goal of the ECSB is price stability, although it doesn't specify exactly what "price stability" means.

8. The Fed is more independent because its substantial revenue from securities and discount loans allows it to control its own budget.

9. The threat that Congress will acquire greater control over the Fed's finances and budget.

10. The theory of bureaucratic behavior indicates that the Fed will want to acquire as much power as possible by requiring all banks to become members. Although the Fed did not succeed in obtaining legislation requiring all banks to become members of the system, it was successful in getting Congress to legislate extension of many of the regulations that were previously imposed solely on member banks (for instance, reserve requirements) to all other depository institutions. Thus the Fed was successful in extending its power.

11. False. Maximizing one's welfare does not rule out altruism. Operating in the public interest is clearly one objective of the Fed. The theory of bureaucratic behavior merely points out that other objectives, such as maximizing power, also influence Fed decision making.

12. Eliminating the Fed's independence might make it more shortsighted and subject to political influence. Thus, when political gains could be achieved by expansionary policy before an election, the Fed might be more likely to engage in this activity. As a result, more pronounced political business cycles might result.

13. False. The Fed is still subject to political pressure, because Congress can pass legislation limiting the Fed's power. If the Fed is performing badly, Congress can make the Fed accountable by passing legislation that the Fed does not like.

14. Uncertain. Although independence may help the Fed take the long view, because its personnel are not directly affected by the outcome of the next election, the Fed can still be influenced by political pressure. In addition, the lack of Fed accountability because of its independence may make the Fed more irresponsible. Thus it is not absolutely clear that the Fed is more farsighted as a result of its independence.

15. The argument for not releasing the FOMC directives immediately is that it keeps Congress off the Fed's back, thus enabling the Fed to pursue an independent monetary policy that is less subject to inflation and political business cycles. The argument for releasing the directive immediately is that it would make the Fed more accountable.

Chapter 14
The Money Supply Process

1. Reserves and the monetary base fall by $2 million, as the following T-accounts indicate:

First National Bank

Assets		**Liabilities**	
Reserves	–$2 million		
Securities	+$2 million		

Federal Reserve System

Assets		**Liabilities**	
Securities	–$2 million	Reserves	–$2 million

2. False. There would still be leakage into currency and excess reserves that would limit the increase in deposit expansion. We can also see this in Equation (4) because the denominator will not equal zero if $r = 0$; therefore, the money multiplier will not be infinite.

3. The money supply fell sharply because when c rose, there was a shift from one component of the money supply (checkable deposits) with more multiple expansion to another (currency) with less. Overall multiple deposit expansion fell, leading to a decline in the money supply.

4. None.

5. There is a shift from one component of the money supply (checkable deposits) with less multiple expansion to another (traveler's checks) with more multiple expansion. Multiple expansion therefore increases, and the money supply increases.

6. The Fed sale of bonds to the First National Bank reduces reserves by $2 million; the T-accounts are identical to those in the section titled "Multiple Deposit Contraction," except that all the entries are multiplied by 20,000 (that is, –$100 becomes –$2 million). The net result is that checkable deposits decline by $20 million.

7. Yes, because with no reserve requirements on time deposits, a shift from checkable deposits (with less multiple expansion) to time deposits (with more multiple expansion) increases the total amount of deposits and raises M2. However, if reserve requirements were equal for both types of deposits, they would both undergo the same amount of multiple expansion, and a shift from one to the other would have no effect on M2. Thus control of M2 would be better because random shifts from time deposits to checkable deposits, or vice versa, would not affect M2.

8. The total increase in checkable deposits is only \$5 million, substantially less than the \$10 million that occurs when no excess reserves are held. The reason is that banks now end up holding 20 percent of deposits as reserves and only lend out 80 percent, so that the increase in deposits found in the T-accounts is \$1,000,000 + \$800,000 + \$640,000 + \$512,000 + \$409,600 + . . . = \$5 million.

9. Both the Fed's purchase of \$100 million of bonds (which raises the monetary base) and the lowering of r (which increases the amount of multiple expansion and raises the money multiplier) lead to a rise in the money supply.

10. The banking system is still not in equilibrium because there continues to be \$100 million of excess reserves (= \$1 billion of reserves minus \$900 million of required reserves, 10 percent of the \$9 billion of deposits). The excess reserves will be lent out until equilibrium is reached with an additional \$1 billion of checkable deposits. The T-account for the banking system when it is in equilibrium is as follows:

Banking System

Assets		**Liabilities**	
Reserves	+\$ 1 billion	Discount Loans	+\$ 1 billion
Loans	+\$10 billion	Checkable deposits	+\$10 billion

11. The Fed's sale of \$1 million of bonds shrinks the monetary base by \$1 million, and the reduction of borrowings from the Federal Reserve lowers the monetary base by another \$1 million. The resulting \$2 million decline in the monetary base leads to a decline in the money supply.

12. \$500 = \$100/0.2, as the formula in Equation (1) indicates.

13. None. The reduction of \$10 million in discount loans and increase of \$10 million of bonds held by the Fed leaves the level of reserves unchanged so that checkable deposits remain unchanged.

14. The deposit of \$100 in the bank increases its reserves by \$100. This starts the process of multiple deposit expansion, leading to an increase in the money supply.

15. Uncertain. As the formula in Equation (4) indicates, if $r + e$ is greater than 1, the money multiplier can be less than 1. In practice, however, e is so small that $r + e$ is less than 1 and the money multiplier is greater than 1.

16. The money supply fell sharply because when c rose, there was a shift from one component of the money supply (checkable deposits) with more multiple expansion to another (currency) with less. Overall multiple deposit expansion fell, leading to a decline in the money supply.

17. The rise in banks' holdings of excess reserves relative to checkable deposits meant that the banking system in effect had fewer reserves to support checkable deposits. Thus the money multiplier fell, and this led to a decline in the money supply.

18. Both the Fed's purchase of \$100 million of bonds (which raises the monetary base) and the lowering of r (which increases the amount of multiple expansion and raises the money multiplier) lead to a rise in the money supply.

19. The Fed's sale of $1 million of bonds shrinks the monetary base by $1 million, and the reduction of borrowing from the Federal Reserve lowers the monetary base by another $1 million. The resulting $2 million decline in the monetary base leads to a decline in the money supply.

20. The money supply falls. The rise in c means that there has been a shift from deposits which undergo multiple deposit expansion to currency which does not. Thus overall level of multiple expansion declines, and the money multiplier and money supply fall.

Chapter 15
Tools of Monetary Policy

1. The snowstorm would cause float to increase, which would increase the monetary base. To counteract this effect, the manager will undertake a defensive open market sale.

2. When the public's holding of currency increases, during Christmas, the currency–checkable deposits ratio increases and the money supply falls. To counteract this decline in the money supply, the Fed will conduct a defensive open market purchase.

3. As we saw in Chapter 13, when the Treasury's deposits at the Fed fall, the monetary base increases. To counteract this increase, the manager would undertake an open market sale.

4. Because the decrease in float is only temporary, the monetary base is expected to decline only temporarily. A repurchase agreement only temporarily injects reserves into the banking system, so it is a sensible way of counteracting the temporary decline in the monetary base due to the decline in float.

5. It suggests that defensive open market operations are far more common than dynamic operations because repurchase agreements are used primarily to conduct defensive operations to counteract temporary changes in the monetary base.

6. False. The Fed also can affect the level of borrowed reserves by directly limiting the amount of discount loans an individual bank can have.

7. A rise in checkable deposits leads to a rise in required reserves at any given interest rate, and thus shifts the demand curve to the right. If the federal funds rate is initially below the discount rate, this then leads to a rise in the federal funds rate. If the federal funds rate is initially at the discount rate, then the federal funds rate will just remain at the discount rate.

8. The switch from deposits into currency lowers the amount of reserves as was shown in the T-accounts of Chapter 15 and this lowers the supply of reserves at any given interest rate, thus shifting the supply curve to the left. The fall in deposits also leads to lower required reserves and hence a shift in the demand curve to the left. However, because the fall in required reserves is only a fraction of the fall in the supply of reserves (because the required reserve ratio is much less than one), the supply curve shifts left by more than the demand curve. Thus if the discount rate is initially above the fed funds target, the fed funds rate will rise. However, if the fed funds rate is at the discount rate, then the fed funds rate will remain at the discount rate.

9. This statement is incorrect. The FDIC would not be effective in eliminating bank panics without Fed discounting to troubled banks to keep bank failures from spreading.

10. The costs are that banks that deserve to go out of business because of poor management may survive because of Fed discounting to prevent panics. This might lead to an inefficient banking system with many poorly run banks.

11. Most likely not. If the federal funds rate target is initially below the discount rate and the decline in the discount rate still leaves it above the federal funds target, then the shift in the supply curve has no effect on the federal funds rate. Furthermore, the Fed usually moves the discount rate in line with changes in the federal funds rate target, so that changes in the discount rate provide no additional information about the direction of monetary policy.

12. When interest rates rise during a boom, if they rise above the discount rate, there will be borrowing from the discount window and the level of borrowed reserves will increase. The result is a rise in the monetary base and the money supply during a boom. Similarly, during a recession, if market interest rates were above the discount rate, then when they fall, there will be less borrowing from the discount window and the monetary base will fall, leading to a decline in the money supply. The procyclical movement of the money supply would be undesirable because it would be expansionary when the economy is booming and contractionary when the economy is going into recession.

13. False. As the analysis of the channel/corridor approach to setting interest rates demonstrates, central banks can still tightly control interest rates by putting in place standing facilities where the difference between the interest rate paid on reserves kept at the central bank and the interest rate charged in central bank loans to banks is kept small.

14. One problem with this proposal is that it provides perfect control over the official measure of the money supply, but it may weaken control over the measure of the money supply that is economically relevant. An additional problem is that it will result in a costly restructuring of the financial system, as banks are forced to get out of the loan business.

15. Open market operations are more flexible, reversible, and faster to implement than the other two tools. Discount policy is more flexible, reversible, and faster to implement than changing reserve requirements, but it is less effective than either of the other two tools.

Chapter 16
The Conduct of Monetary Policy: Strategy and Tactics

1. Disagree. Some unemployment is beneficial to the economy because the availability of vacant jobs makes it more likely that a worker will find the right job and that the employer will find the right worker for the job.

2. (a) The ten-year bond is an intermediate target because it is not directly affected by the tools of the Fed, but is linked to economic activity. (b) The monetary base is an operating target because it can be directly affected by the tools of the Fed and is only linked to economic activity through its effect on the money supply. (c) M1 is an intermediate target because it is not directly affected by the tools of the Fed and has some direct effect on economic activity.

3. True. In such a world, hitting a reserves target would mean that the Fed would also hit its interest-rate target, or vice versa. Thus the Fed could pursue both a reserves target and an interest-rate target at the same time.

4. An increase in the demand for reserves will raise the federal funds target. In order to prevent this, the Fed will buy bonds, thereby increasing the amount of nonborrowed reserves, which shifts the supply curve for reserves to the right, thereby keeping the fed funds rate from rising. The open market purchase will then cause the monetary base and the money supply to rise.

5. The Fed can control the interest rate on federal funds by buying and selling bonds in the open market. When the fed funds rate rises above the target level, the Fed would buy bonds, which would increase nonborrowed reserves and lower the interest rate to its target level. Similarly, when the fed funds rate falls below the target level, the Fed would sell bonds to raise the interest rate to the target level. The resulting open market operations would of course affect the quantity of reserves and the money supply and cause it to change. The Fed would be giving up control of reserves and the money supply to pursue its interest-rate target.

6. The monetary base is more controllable than M1 because it is more directly influenced by the tools of the Fed. It is measured more accurately and quickly than M1 because the Fed can calculate the base from its own balance sheet data, while it constructs M1 numbers from surveys of banks, which take some time to collect and are not always that accurate. Even though the base is a better intermediate target on the grounds of measurability and controllability, it is not necessarily a better intermediate target because its link to economic activity may be weaker than that between M1 and economic activity.

7. Disagree. Although *nominal* interest rates are measured more accurately and more quickly than the money supply, the interest-rate variable that is of more concern to policymakers is the *real* interest rate. Because the measurement of real interest rates requires estimates of expected inflation, it is not true that real interest rates are necessarily measured more accurately and more quickly than the money supply. Interest-rate targets are therefore not necessarily better than money supply targets.

8. A nominal anchor helps promote price stability by tying inflation expectations to low levels directly through its constraint on the value of money. It can also limit the time-inconsistency problem by providing an expected constraint on monetary policy.

10. Central bankers might think they can boost output or lower unemployment by pursuing overly expansionary monetary policy even though in the long run this just leads to higher inflation and no gains on the output or unemployment front. Alternatively, politicians may pressure the central bank to pursue overly expansionary policies.

11. Monetary targeting has the advantage that it enables a central bank to adjust its monetary policy to cope with domestic considerations. Furthermore, information on whether the central bank is achieving its target is known almost immediately.

12. Monetary targeting only works well *if* there is a reliable relationship between the monetary aggregate and inflation, a relationship that has often not held in different countries.

13. Inflation-targeting central banks engage in extensive public information campaigns that include the distribution of glossy brochures, the publication of *Inflation Report*-type documents, making speeches to the public, and continual communication with the elected government.

14. Sustained success in the conduct of monetary policy as measured against a pre-announced and well-defined inflation target can be instrumental in building public support for a central bank's independence and for its policies. Also inflation targeting is consistent with democratic principles because the central bank is more accountable.

15. Uncertain. If the relationship between monetary aggregates and the goal variable—say, inflation—is unstable, then the signal provided by the monetary aggregates is not very useful and is not a good indicator of whether the stance of monetary policy is correct.

16. False. Inflation targeting does not imply a *sole* focus on inflation. In practice, inflation targeters do worry about output fluctuations, and inflation targeting may even be able to reduce output fluctuations because it allows monetary policymakers to respond more aggressively to declines in demand because they don't have to worry that the resulting expansionary monetary policy will lead to a sharp rise in inflation expectations.

17. False. There is no long-run trade-off between inflation and unemployment, so in the long run a central bank with a dual mandate that attempts to promote maximum employment by pursuing inflationary policies would have no more success at reducing unemployment than one whose primary goal is price stability.

18. This strategy has the following advantages: (1) it enables monetary policy to focus on domestic considerations; (2) it does not rely on a stable money-inflation relationship; and (3) it has had a demonstrated success, producing low inflation with the longest business cycle expansion since World War II. However, it has the following disadvantages: (1) it has a lack of transparency; (2) it is strongly dependent on the preferences, skills, and trustworthiness of individuals in the central bank and the government; and (3) it has some inconsistencies with democratic principles because the central bank is not highly accountable.

19. All allow a central bank to pursue an independent monetary policy that can focus on domestic considerations.

20. Bank behavior can lead to procyclical money growth because when interest rates rise in a boom, they decrease excess reserves and increase their borrowing from the Fed, both of which lead to a higher money supply. Similarly, when interest rates fall in a recession, they increase excess reserves and decrease their borrowing from the Fed, leading to a lower money supply. The result is that the money supply will tend to grow faster in booms and slower in recessions—it is procyclical. Fed behavior also can lead to procyclical money growth because (as the answer to problem 1 indicates) an interest-rate target can lead to a slower rate of growth of the money supply during recessions and a more rapid rate of growth during booms.

Chapter 17
The Foreign Exchange Market

1. You are more likely to drink California wine because the franc appreciation makes French wine relatively more expensive than California wine.

2. False. Although a weak currency has the negative effect of making it more expensive to buy foreign goods or to travel abroad, it may help domestic industry. Domestic goods become cheaper relative to foreign goods, and the demand for domestically produced goods increases. The resulting higher sales of domestic products may lead to higher employment, a beneficial effect on the economy.

4. It predicts that the value of the yen will fall 5% in terms of dollars.

5. In the long run, the fall in the demand for a country's exports leads to a depreciation of its currency, but the higher tariffs lead to an appreciation. Therefore, the effect on the exchange rate is uncertain.

6. Even though the Japanese price level rose relative to the American, the yen appreciated because the increase in Japanese productivity relative to American productivity made it possible for the Japanese to continue to sell their goods at a profit at a high value of the yen.

7. The dollar will appreciate. Because expected U.S. inflation falls as a result of the announcement, there will be an expected appreciation of the dollar and so the the expected return on dollar assets will rise. As a result, the demand curve will shift to the right and the equilibrium value of the dollar will rise.

8. The pound depreciates but overshoots, declining by more in the short run than in the long run. Consider Britain to be the domestic country. The rise in the money supply leads to a higher domestic price level in the long run, which leads to a lower expected future exchange rate. In addition, the rise in the money supply lowers the domestic interest rate on pound assets. Both of these changes lower the expected return on pound assets at any given exchange rate, shifting the demand curve to the left. The short-run outcome is a lower value of the pound. However, in the long run, the domestic interest rate returns to its previous value, and the demand curve shifts back to the right somewhat. The exchange rate rises to some extent, but still remains below its initial level.

9. The Indian rupee will appreciate. The announcement of tariffs will raise the expected future exchange rate for the rupee and so increase the expected appreciation of the rupee. This means that the demand for rupee denominated assets will increase, shifting the demand curve to the right, and the rupee exchange rate therefore rises.

10. The dollar will depreciate. A rise in nominal interest rates but a decline in the real rate implies a rise in expected inflation that produces an expected depreciation of the dollar that is larger than the increase in the domestic interest rate. As a result, the expected return on dollar assets falls at any exchange rate, shifting the demand curve to the left and leading to a fall in the exchange rate.

11. The dollar will appreciate. The increase in U.S. productivity raises the expected future exchange rate and thus raises the expected return on dollar assets at any exchange rate. The resulting rightward shift of the demand curve leads to a rise in the equilibrium exchange rate.

12. The peso will depreciate. Consider Mexico to be the domestic country. An increased demand for imports would lower the expected future exchange rate and result in a lower expected appreciation of the peso. The resulting lower expected return on peso assets at any given exchange rate would then shift the demand curve to the left, leading to a fall in the peso exchange rate.

13. The dollar will depreciate. The drop of expected inflation in Europe, which leads to a decline in the foreign interest rate (which is smaller than the drop in expected inflation), leads to a rise in the real return on foreign assets because the expected euro appreciation is greater than the decline in the foreign interest rate. The result is a decline in the relative expected return on dollar assets, a leftward shift of the demand curve, and the equilibrium U.S. exchange rate falls.

14. The contraction of the European money supply will increase European interest rates and raise the future value of the euro, both of which will decrease the relative expected return on dollar assets. The demand curve will then shift to the left, and the dollar will depreciate.

15. Consider Europe to be the domestic country. Because it is harder to get French goods, people will buy more foreign goods and the value of the euro in the future will fall. The expected depreciation of the euro lowers the expected return on dollar assets at any exchange rate, so the demand curve shifts to the left, and the value of the euro will fall.

Chapter 18
The International Financial System

1. The purchase of dollars involves a sale of foreign assets which means that international reserves fall. However, the offsetting open market purchase means that the monetary base and the money supply will remain unchanged. There is thus no change in the expected return on dollar assets, so the demand curve does not shift, and the exchange rate also remains unchanged.

2. The purchase of dollars involves a sale of foreign assets, which means that international reserves fall and the monetary base decreases. The resulting fall in the money supply causes interest rates to rise and lowers the future price level, thereby raising the future expected exchange rate. Both of these effects raise the expected return on dollar assets at any given exchange rate, shifting the demand curve to the right and raising the equilibrium exchange rate.

3. (a) A receipt in the capital account; (b) a payment in the current account; (c) a negative change in net international reserves; (d) a receipt in the current account; (e) a payment in the current account; (f) a payment in the capital account; and (g) a receipt in the capital account.

4. Because other countries often intervene in the foreign exchange market when the United States has a deficit so that U.S. holdings of international reserves do not change. By contrast, when the Netherlands has a deficit, it must intervene in the foreign exchange market and buy euros, which results in a reduction of international reserves for the Netherlands and Euroland.

5. The increase in British productivity would create a tendency for the pound to appreciate relative to the dollar. The higher value of the pound would now cause Americans to exchange dollars for gold, ship the gold to Britain, and then buy British pounds with the gold. The result is that British holdings of gold (international reserves) would increase, which would raise the money supply because the monetary base would increase. The higher British money supply would then tend to lower the exchange rate back down to its par level because it would cause the price level to rise, which would lead to a depreciation of the pound.

6. Two francs per dollar.

7. The situation would be as depicted in Figure 2, Panel (b). The central bank would need to sell domestic currency and buy foreign assets, thus increasing its international reserves and the monetary base. The resulting rise in the money supply would then lead to a decline in the domestic interest rate which would shift R^D in to the left so that the equilibrium exchange rate would be at par.

8. A large balance-of-payments surplus may require a country to finance the surplus by selling its currency in the foreign exchange market, thereby gaining international reserves. The result is that the central bank will have supplied more of its currency to the public, and the monetary base will rise. The resulting rise in the money supply can cause the price level to rise, leading to a higher inflation rate.

9. True, because when the exchange rate is falling, the central bank must buy its currency, which lowers its holdings of international reserves and its monetary base. Similarly, when the exchange rate is rising, it must sell its currency, which raises its holdings of international reserves and its monetary base. The necessary central bank intervention to keep its exchange rate fixed thus affects the monetary base and hence the money supply.

10. To finance the deficits, the central banks in these countries might intervene in the foreign exchange market and buy domestic currency, thereby implementing a contractionary monetary policy. The result is that they sell off international reserves and their monetary base falls, leading to a decline in the money supply.

11. False. As seen in the chapter, a reserve currency country, such as the United States, can have its balance of payments deficits financed by foreign central banks, leaving its international reserves unchanged.

12. When other countries buy U.S. dollars to keep their exchange rates from changing vis-à-vis the dollar because of the U.S. deficits, they gain international reserves and their monetary base increases. The outcome is that the money supply in these countries grows faster and leads to higher inflation throughout the world.

13. False. Inflation occurred when the world was under the gold standard before World War I. The gold discoveries in the Klondike and South Africa before World War I led to a continuing increase in the quantity of gold, which caused a more rapid growth in money supplies throughout the world. The result was worldwide inflation.

14. There are no direct effects on the money supply, because there is no central bank intervention in a pure flexible exchange rate regime; therefore, changes in international reserves that affect the monetary base do not occur. However, monetary policy can be affected by the foreign exchange market, because monetary authorities may want to manipulate exchange rates by changing the money supply and interest rates.

15. Uncertain. Although after 1973, countries no longer must intervene in the foreign exchange market to keep their currencies at a par level and so could pursue more independent monetary policy, they have not chosen to do so; rather, they have continued to engage in substantial intervention in the foreign exchange market. Thus they continue to have substantial fluctuations in international reserves, which affect their money supply.

16. First, the exchange-rate target directly keeps inflation under control by tying the inflation rate for internationally traded goods to that found in the anchor country to which its currency is pegged. Second, it provides an automatic rule for the conduct of monetary policy that helps mitigate the time-inconsistency problem. Third, it has the advantage of simplicity and clarity.

17. German reunification produced tight monetary policy in Germany which raised interest rates for the other ERM countries because their currencies were pegged to the German mark. The high interest rates then slowed economic growth and increased unemployment in the other countries.

18. With a pegged exchange rate, speculators are sometimes presented with a one-way bet in which the only direction for a currency to go is down in value. In this case, selling the currency before the likely depreciation gives speculators an attractive profit opportunity with potentially high expected returns. As a result, they jump on board and attack the currency.

19. Emerging market countries may not lose much by giving up the ability to pursue an independent monetary policy because they are unable to do monetary policy well as a result of weak political or monetary institutions.

20. The long-term bond market can help reduce the time-inconsistency problem because politicians and central banks will realize that pursuing an overly expansionary policy will lead to an inflation scare in which inflation expectations surge, interest rates rise, and there is a sharp fall in long-term bond prices. Similarly, they will realize that overly expansionary monetary policy will result in a sharp fall in the value of the currency. Avoiding these outcomes constrains policymakers and politicians so time-inconsistent monetary policy is less likely to occur.

21. Exchange rate targeting is likely to be a sensible strategy for industrialized countries when domestic monetary and political institutions are not conducive to good monetary policymaking, and when there are other important benefits of an exchange rate target that have nothing to do with monetary policy. Exchange rate targeting is likely to be sensible for emerging market countries whose political and monetary institutions are weak so that it is the only way to break inflationary psychology and stabilize the economy.

22. A currency board has the advantage that the central bank no longer can print money to create inflation, and so it is a stronger commitment to a fixed exchange rate. The disadvantage is that it is still subject to a speculative attack, which can lead to a sharp contraction of the money supply. In addition, a currency board limits the ability of the central bank to play a lender-of-last-resort role.

23. Dollarization has the advantage that there is no possibility of a speculative attack. Dollarization has the disadvantage that it results in the loss of seignorage, the revenue to the government from having its own currency.

Chapter 19
The Demand for Money

1. Velocity is approximately 10 in 2004, 11 in 2005, and 12 in 2006. The rate of velocity growth is approximately 10% per year.

2. Nominal GDP increases from $1 trillion to $1.5 trillion.

3. Nominal GDP declines by approximately 10%.

4. Velocity would fall because a greater quantity of the money supply (M) would be needed to carry out the same level of transactions (PY); $PY/M = V$ would then fall.

5. The price level quadruples.

6. The price level declines from 2 (=2,000/1,000) to 1.5 (=1,500/1,000).

7. The two largest declines are during the recession in 1920 and the Great Depression of 1929–1933. These declines suggest that velocity is procyclical—that is, it rises in business cycle upturns and falls in business cycle downturns. The data in Figure 1 indicate that it is not reasonable to assume that declines in the quantity of money cause declines in aggregate spending because when aggregate spending declines it could just reflect the fact that velocity declines at that time.

9. The demand for money will decrease. People would be more likely to expect interest rates to fall and therefore more likely to expect bond prices to rise. The increase in the expected return on bonds relative to money will then mean that people would demand less money.

10. Because it indicates that money demand and hence velocity is affected by interest rates, and since interest rates fluctuate a lot, velocity will as well. Furthermore, as the answer to Problem 9 suggests, changes in people's expectations about what the normal level of interest rates are will cause money demand and hence velocity to fluctuate. Keynes's analysis of the speculative demand for money thus suggests that velocity will be far from constant; rather, it will undergo substantial fluctuations.

11. Money balances should average one-half of Grant's monthly income, because he would hold no bonds, because holding them would entail additional brokerage costs but would not provide him with any interest income.

12. Zero. Holding bonds does not lead to any brokerage costs, but they do pay interest. Thus bonds are clearly preferred to cash, which pays no interest. Grant will hold only bonds, no cash.

13. True. Because bonds are riskier than money, risk-averse people would be likely to want to hold both.

14. In Keynes's view, a rise in interest rates leads to a lower relative expected return of money and hence a lower demand for money. In Friedman's view, a rise in interest rates leads to an increase in the implicit interest paid on checkable deposits, so the relative expected return of money only falls by a small amount. Hence, in Friedman's view, the demand for money changes little when interest rates rise.

15. In Keynes's view, velocity is unpredictable because interest rates, which have large fluctuations, affect the demand for money and hence velocity. In addition, Keynes's analysis suggests that if people's expectations of the normal level of interest rates change, the demand for money changes. Keynes thought that these expectations moved unpredictably, meaning that money demand and velocity are also unpredictable. Friedman sees the demand for money as stable, and because he also believes that changes in interest rates have only small effects on the demand for money, his position is that the demand for money, and hence velocity, is predictable.

Chapter 20
The *ISLM* Model

1. When $DI = 0$, $C = 100$; when $DI = 400$, $C = 460$; when $DI = 800$, $C = 820$; when $DI = 1{,}200$, $C = 1{,}180$.

2. Companies cut production when their unplanned inventory investment is greater than zero, because they are then producing more than they can sell. If they continue at current production, profits will suffer because they are building up unwanted inventory, which is costly to store and finance.

3. (a) Equilibrium output of 1,200 occurs at the intersection of the 45E $Y = Y^{ad}$ line and the aggregate demand function, $Y^{ad} = C + I = 300 + 0.75Y$. (b) The equilibrium level of output falls by 400 to 800.

4. The equilibrium level of output is 1,500. When planned investment spending falls by 100, the equilibrium level of output falls by 500 to 1,000.

5. The multiplier in Problem 4 equals 5 [$= 1/(I - mpc) = 1/(1 - 0.8) = 1/0.2$] and in Problem 3 it equals 4 [$= 1/ (1 - 0.75) = 1/0.25$]. The intuitive explanation for the higher multiplier in Problem 4 is that the higher marginal propensity to consume in that case results in a greater rise in consumer expenditure when there is an increase in planned investment spending that raises income. The greater rise in consumer expenditure then leads to a higher quantity of output demanded (aggregate demand) and hence to a higher level of equilibrium output.

6. Nothing. The $100 billion increase in planned investment spending is exactly offset by the $100 billion decline in autonomous consumer expenditure, and autonomous spending and aggregate output remain unchanged.

7. True. In both situations, autonomous spending rises by $50 billion, leading to the same increase in aggregate output.

8. Equilibrium output of 2,000 occurs at the intersection of the 45 degree line $Y = Y^{ad}$ and the aggregate demand function $Y^{ad} = C + I + G = 400 + 0.75Y$. If government spending rises by 100, equilibrium output will rise by 400 to 2,400.

9. $500 billion because the multiplier equals 2 [$=1/(1 - mpc) = 1/(1 - 0.5) = 1/0.5$].

10. Taxes should be reduced by $400 billion because the increase in output for a $$T$ decrease in taxes is $$T$; that is, it equals the change in autonomous spending mpc X T times the multiplier $1/(1 - mpc) = (mpc \text{ X } T)\,[1/(1 - mpc)] = 0.5T\,[1/(1 - 0.5)] = 0.5T/0.5 = T$.

11. Aggregate output falls by $300 billion. As a result of the reduction in taxes, consumer expenditure increases by $150 billion ($mpc \times$ the change in taxes $= 0.5 \times 300$), while government spending falls by $300 billion, so the net change in autonomous spending is –$150 billion. Since the multiplier is 2 [$= 1/(1 - mpc) = 1/(I - 0.5) = 1/0.5$], aggregate output changes by –$300 billion ($= -150 \times 2$).

12. Rise. The fall in autonomous spending from an increase in taxes is always less than the change in taxes because the marginal propensity to consume is less than 1. By contrast, autonomous spending rises one-for-one with a change in autonomous consumer expenditure. If taxes and autonomous consumer expenditure rise by the same amount, autonomous spending must rise, and aggregate output also rises.

13. Since as interest rates fall, planned investment spending doesn't change, equilibrium output remains unchanged. This means that the *IS* curve is vertical.

14. When aggregate output falls, the demand for money falls, shifting the money demand curve to the left, which causes the equilibrium interest rate to fall. Because the equilibrium interest rate falls when aggregate output falls, there is a positive association between aggregate output and the equilibrium interest rate, and the *LM* curve slopes up.

15. False. Even if the economy is at a point off both the *IS* and *LM* curves, it will have a tendency to move toward both of them. Only when it is at the intersection of both curves is there no tendency for the interest rate and output to change, so this is where the economy comes to rest.

Chapter 21
Monetary and Fiscal Policy in the *ISLM* Model

1. The *IS* curve shifts to the right. An equal rise in government spending and taxes leads to a rise in autonomous spending because the resulting decrease in consumer expenditure is less than the increase in government spending. The aggregate demand function rises in the Keynesian cross diagram, and so aggregate output is higher at any given level of interest rates, leading to a rightward shift of the *IS* curve.

2. When investment spending collapsed, the aggregate demand function in the Keynesian cross diagram fell, leading to a lower level of equilibrium output for any given interest rate. The fall in equilibrium output for any given interest rate implies that the *IS* curve shifted to the left.

3. The effect on the *LM* curve is uncertain. Since the demand for money falls at the same time that the money supply is decreased, it is not clear whether, at a point on the original *LM* curve, there will be an excess supply of money or an excess demand for money. Thus the *LM* curve might shift to the right or the left.

4. False. It can also be eliminated by a fall in aggregate output, which lowers the demand for money and brings it back into equality with the supply of money.

5. Aggregate output should have declined, while the effect on the interest rate is uncertain. The tax increase would cause the *IS* curve to shift to the left, while the reduction in the money supply causes the *LM* curve to shift to the left. Aggregate output at the intersection of the new *IS* and *LM* curves is necessarily lower than at the old equilibrium, but the new equilibrium interest rate could either be higher or lower, depending on which curve shifts more.

6. The *ISLM* model gives exactly this result. The tax cuts shifted the *IS* curve to the right, while tight money shifted the *LM* curve to the left. The interest rate at the intersection of the new *IS* and *LM* curves is necessarily higher than at the initial equilibrium, and aggregate output can be higher.

7. It increases the money supply so that the *LM* curve shifts out at the same time that the *IS* curve shifts out because of the increase in military spending. Then the intersection of the new *IS* and *LM* curves need not be at a higher interest rate.

8. Because it suggests that an interest-rate target is better than a money supply target. The reason is that unstable money demand increases the volatility of the *LM* curve relative to the *IS* curve, which makes it more likely that an interest-rate target is preferred to a money supply target.

9. False. As the price level rises, real money balances decline and the *LM* curve shifts to the left. The outcome of a higher price level is thus a decline in equilibrium output.

10. The effect on the aggregate demand curve is uncertain. A rise in government spending would shift the *IS* curve to the right, raising equilibrium output for a given price level. The reduction in the money supply would shift the *LM* curve to the left, lowering equilibrium output for a given price level. Depending on which of these two effects on equilibrium output is stronger, the aggregate demand curve could shift either to the right or to the left.

11. An equal rise in government spending and taxes raises autonomous spending and causes the *IS* curve to shift to the right. As a result, equilibrium output rises at each given price level and the aggregate demand curve shifts to the right.

12. No effect. The *LM* curve would be vertical in this case, meaning that a rise in government spending and a rightward shift in the *IS* curve would not lead to higher aggregate output but rather just to a rise in the interest rate. For any given price level, therefore, equilibrium output would remain the same, and the aggregate demand curve would not shift.

13. Interest rates and output will fall (which is exactly what happened during the Great Depression). The decline in autonomous consumer expenditure shifts the *IS* curve to the left, and the equilibrium level of interest rates and output will fall.

14. The increase in net exports shifts the *IS* curve to the right, and the equilibrium level of interest rates and aggregate output will rise.

15. Interest rates will rise and aggregate output will fall. The rise in the demand for money creates an excess demand for money at each point on the initial *LM* curve. For any given interest rate, this excess demand for money can be eliminated by a decline in output, so the new *LM* curve must be to the left of the initial *LM* curve. The leftward shift of the *LM* curve leads to a higher level of the equilibrium interest rate and a lower level of equilibrium output.

Chapter 22
Aggregate Demand and Supply Analysis

1. From the equation of exchange aggregate spending, PY equals \$2,000 billion ($= MV = 400 \times 5$). The aggregate demand curve on the graph should show that, when $P = 0.5$, $Y = 4{,}000$; when $P = 1.0$, $Y = 2{,}000$; and when $P = 2.0$, $Y = 1{,}000$. If the money supply falls to \$50 billion, the aggregate demand curve shifts to the left. You will see this on your graph because aggregate spending now equals only \$250 billion, and the new aggregate demand curve shows that, when $P = 0.5$, $Y = 500$; when $P = 1.0$, $Y = 250$; and when $P = 2.0$, $Y = 125$.

2. Because the position of the aggregate demand curve is fixed if nominal income ($P + Y$) is fixed, Friedman's statement implies that the position of the aggregate demand curve is completely determined by the quantity of money. This is built into the monetarist aggregate demand curve because it shifts only when the money supply changes.

3. The effect on the aggregate demand curve is uncertain because increased government spending would shift it to the right while the reduction in the money supply shifts it to the left.

4. The aggregate demand curve shifts because a change in "animal spirits" causes consumer expenditure or planned investment spending to change, which then causes the quantity of aggregate output demanded to change at any given price level.

5. The lower cost of foreign goods means that the costs of production fall in the United States, and the short-run aggregate supply curve shifts outward. The strong dollar makes foreign goods more competitive with U.S. goods so that net exports fall. The lower quantity of output demanded at each price level implies that the aggregate demand curve shifts inward.

6. True. Given fixed production costs in the short run, firms can earn higher profits by producing more when prices are higher. Profit-maximizing behavior on the part of firms thus leads them to increase production when prices are higher.

7. The short-run aggregate supply curve will shift inward because wages and production costs rise, since workers and firms expect prices to be higher.

8. The short-run aggregate supply curve would shift to the right because production costs would fall, and the long-run aggregate supply curve would also shift to the right because productivity would be higher.

9. Initially, unemployment is above the natural rate level, which causes wages to fall and the short-run aggregate supply curve to shift outward. The economy will then slide down along the aggregate demand curve, and the price level will fall until aggregate output has risen to the natural-rate level and there is no further tendency for wages to fall.

10. The collapse in investment spending during the Great Depression reduced the quantity of output demanded at any given price level and shifted the aggregate demand curve to the left. In an aggregate demand and supply diagram, the equilibrium price level and aggregate output would then fall, which explains the decline in aggregate output and the price level that occurred during the Great Depression.

11. True. Monetarists believe that the economy returns quickly to its long-run position, in which unemployment is at the natural rate level. Since they believe that the long run is not too far off in the future, they do not support activist policy to eliminate unemployment. Keynesians, on the other hand, believe that the economy returns only slowly to its long-run position. Their belief that the long run is far off in the future prompts them to support activist policy to eliminate unemployment.

12. Both the increase in the money supply and the income tax cut will increase the quantity of output demanded at any given price level and so will shift the aggregate demand curve to the right. The intersection of the aggregate demand and short-run aggregate supply curve will be at a higher level of both output and price level in the short run. However, in the long run, the short-run aggregate supply curve will shift leftward, leaving output at the natural rate level, but the price level will be even higher.

13. The price level will be lower than it otherwise would be and aggregate output will be higher. The lower expected inflation will cause the short-run aggregate supply curve to shift up less than it otherwise would, so that the intersection of the short-run aggregate supply curve with the aggregate demand curve will be at a higher level of output and a lower price level.

14. Because goods would cost more, the national sales tax would raise production costs, and the short-run aggregate supply curve would shift to the left. The intersection of the short-run aggregate supply curve with the aggregate demand curve would then be at a higher level of prices and a lower level of aggregate output; aggregate output would fall, and the price level would rise.

15. The improved American competitiveness would cause net exports to rise, leading to a rightward shift of the aggregate demand curve, which would initially raise aggregate output and the price level (increasing inflation). As described in Footnote 6 in the chapter, the decline in the dollar also would have an effect on the short-run aggregate supply curve. The lower value of the dollar would make foreign factors of production over inflation more expensive, which would raise U.S. production costs. The resulting inward shift of the short-run aggregate supply curve would cause the price level to rise further and would offset the expansionary effect on output from the rightward shift of the aggregate demand curve. In the long run, however, aggregate output would return to its natural rate level and the price level would stop rising so that the increase in inflation would be only temporary.

Chapter 23
Transmission Mechanisms of Monetary Policy: The Evidence

1. Method B produces structural-model evidence because it uses a model that explains the channels through which jogging affects health; method A produces reduced-form evidence because it only looks at the correlation of jogging and health.

2. Yes. Even though jogging doesn't lower cholesterol and blood pressure, it might make the heart muscle stronger and thus more able to withstand heart attacks. In this case, jogging would still be good for your health.

3. Yes. If only healthy people like to jog, then the finding that joggers live longer than nonjoggers may only be the result of reverse causation—namely, good health promotes jogging, rather than the other way around.

4. Seeing which car is built better produces structural-model evidence, because it explains why one car is better than the other (that is, how the car is built). Asking owners how often their cars undergo repairs produces reduced-form evidence, because it looks only at the correlation of reliability with the manufacturer of the car.

5. Not necessarily. If GM car owners change their oil more frequently than Ford owners, GM cars would have better repair records, even though they are not more reliable cars. In this case, it is a third factor, the frequency of oil changes, that leads to the better repair record for GM cars.

6. Not necessarily. Although the Ford engine might be built better than the GM engine, the rest of the GM car might be better made than the Ford. The result could be that the GM car is more reliable than the Ford.

7. We learned in Chapter 6 that interest rates tend to increase when aggregate output increases during a boom and tend to fall when aggregate output falls during a recession. Thus, when output rises and interest rates rise, banks would reduce the level of their excess reserves, leading to a rise in the money supply. The outcome is that the rise in output might lead to a rise in the money supply; finding a strong correlation between money and output might reflect causation running from output to money, rather than from money to output.

8. If the Fed has interest-rate targets, a rise in output that raises interest rates might cause the Fed to buy bonds and bid up their price so as to drive interest rates back down to their target level (see Chapter 5). The result of these open market purchases would be that the increase in output would cause an increase in the monetary base and hence an increase in the money supply. In addition, a rise in output and interest rates would cause free reserves to fall (because excess reserves would fall and the volume of discount loans would rise). If the Fed has a free reserves target, the increase in aggregate output will then cause the Fed to increase the money supply because it believes the money is tight.

9. Not necessarily. This timing evidence is suspect because researchers may have focused on the one variable, the money growth rate, that suggests a relationship between money and the business cycle. Furthermore, instead of interpreting the data to say that the money growth rate leads the business cycle, it is also possible to interpret the data to say that the business cycle leads the money growth rate. What makes this timing evidence more convincing is that some of the episodes in which money growth slows appear to be exogenous events. The fact that recessions followed soon thereafter provides more convincing evidence that there is a link between money and business cycles.

10. Monetarists went on to refine their reduced-form models with more sophisticated statistical procedures, one outcome of which was the St. Louis model. Keynesians began to look for transmission mechanisms of monetary policy that they may have ignored.

11. There are three main mechanisms through which the decline in stock prices could have reduced aggregate demand and contributed to the severity of the recession. First, the decline in stock prices lowered Tobin's *q* and might have reduced investment spending. Second, the decline in financial wealth, as a result of the stock price decline, could have caused a drop in consumption because consumers' lifetime resources were reduced. Third, the decline in stock prices lowered the value of financial assets, which increased the public's probability of financial distress, and so they cut back on their purchases of consumer durables and housing.

12. False. Monetary policy can affect stock prices, which affect Tobin's *q*, thereby affecting investment spending. In addition, monetary policy can affect loan availability, which may influence investment spending.

13. Stock prices will rise. One story is that when the money supply rises, people will have more money than they want to hold, so they buy stocks, bidding up their price. Another is that the rise in the money supply lowers interest rates, so the yields on alternative assets to stocks fall. This makes stocks more attractive, increases their demand, and hence raises their price.

14. There are three mechanisms involving consumer expenditure. First, a rise in the money supply lowers interest rates and reduces the cost of financing purchases of consumer durables, and consumer durable expenditure rises. Second, a rise in the money supply causes stock prices and wealth to rise, leading to greater lifetime resources for consumers and causing them to increase their consumption. Third, a rise to the money supply that causes stock prices and the value of financial assets to rise also lowers people's probability of financial distress, so they spend more on consumer durables.

15. Not necessarily. The statement that "money doesn't matter at all" is untrue; however, it does not logically follow that the reverse—"money is all that matters"—is true. Thus many economists accept the monetarist evidence that money does matter but do not believe that money is all that matters.

Chapter 24
Money and Inflation

1. The evidence in this quote does not cast doubt on the statement that inflation is a monetary phenomenon, as long as inflation is thought of as a continuing increase in the price level—sustained inflation. Then the fact that inflation is high one year when money growth is low is not inconsistent with the statement that inflation is always and everywhere a monetary phenomenon.

2. Because hyperinflations appear to be examples in which the increase in money supply growth is an exogenous event, the fact that hyperinflation occurs when money growth is higher is powerful evidence that a high rate of money growth causes inflation.

3. False. Fiscal policy can produce rightward shifts in the aggregate demand curve, which lead to a one-shot increase in the price level. However, fiscal policy cannot produce continuing rightward shifts in the aggregate demand curve because there are limits to how high government spending can be raised (it cannot go above 100 percent of GDP) and how much taxes can be cut (they cannot go below zero). Therefore, since a continuing rightward shift of the aggregate demand curve is required in order for inflation to occur (a continuing increase in the price level), fiscal policy cannot be the source of the inflation.

4. False. Although workers' attempts to push up their wages can lead to inflation if the government has a high employment target, inflation is still a monetary phenomenon, because it cannot occur without accommodating monetary policy.

5. False. Even though policymakers do not want inflation, if they pursue goals such as high employment or choose to run high budget deficits, inflationary monetary policy and inflation can result through the mechanisms in the chapter.

6. True. If financed with money creation, a temporary budget deficit can lead to a one-time rightward shift in the aggregate demand curve and hence to a one-time increase in the price level. However, once the budget deficit disappears, there is no longer any reason for the aggregate demand curve to shift. Thus a temporary deficit cannot lead to a continuing rightward shift of the aggregate demand curve and therefore cannot produce inflation, a continuing increase in the price level.

7. If there is a persistent budget deficit, the government's sale of bonds might continually put pressure on interest rates to rise. If the Fed wants to prevent the rise in interest rates, it buys bonds to bid up their price and thereby lowers interest rates. The resulting increase in the monetary base leads to a continuing increase in the money supply, which produces inflation.

8. True. The monetarist objection to activist policy would no longer be as serious. The aggregate demand curve could be more quickly moved to AD_2 in Figure 11, and the economy would move more quickly to Point 2 because the short-run aggregate supply curve would not have as much time to shift. The scenario of a highly variable price level and output would not occur, making an activist policy more desirable.

9. False. With a more sluggish wage and price adjustment, it is more likely that the short-run aggregate supply curve would remain at AS_1 in Figure 11 when the aggregate demand curve is shifted out to AD_2. Thus the economy would go to Point 2 in Figure 11 and there would be less tendency for movement from Point 1′ to 2′ before getting to Point 2. Thus it is less likely that output and the price level would be highly variable.

10. True, if expectations about policy affect the wage-setting process. In this case, workers and firms are more likely to push up wages and prices because they know that if they do so and unemployment develops as a result, the government will pursue expansionary policies to eliminate the unemployment. Therefore, the cost of pushing up wages and prices is lower, and workers and firms will be more likely to do it.

11. For two reasons. First, policymakers may choose too high an employment target and thus produce the demand-pull inflation depicted in Figure 7. Second, the high employment policy is more likely to produce a cost-push inflation, as the answer to Problem 8 indicates.

12. True. If expectations about policy have no effect on the short-run aggregate supply curve, a cost-push inflation is less likely to develop when policymakers pursue an activist accommodating policy. Furthermore, if expectations about policy do not matter, pursuing a nonaccommodating, nonactivist policy does not have the hidden benefit of making it less likely that workers will push up their wages and create unemployment. The case for an activist policy is therefore stronger.

13. Not necessarily, because an activist policy to eliminate unemployment is likely to lead to the demand-pull and cost-push inflations depicted in Figure 6 and Figure 7. In addition, the activist policy might lead to a higher probability that workers will push up their wages, which results in episodes of high unemployment.

14. The Fed's big stick is the ability to let unemployment develop as a result of a wage push by not trying to eliminate unemployment with expansionary monetary policy. The statement proposes that the Fed should pursue a nonaccommodating policy because this will prevent cost-push inflation and make it less likely that unemployment develops because of workers' attempts to push up their wages.

15. Yes. If Bush let the hostage-taking influence the U.S. to be more accommodating to Sadaam Hussein, then Iraq would be less likely to get out of Kuwait. Not only would this make it less likely that U.S. policy would be successful, but it would also make it more likely that American hostages would be taken in the future.

Chapter 25
Rational Expectations: Implications for Policy

1. Long-term interest rates will fall. Theories of the term structure suggest that long-term interest rates are related to the expected average of future short-term interest rates. When the public expects the Fed to raise short-term interest rates permanently, they raise their expectations of future short-term rates and long rates are higher. Then, when the Fed does not go through with the expected policy of raising short-term rates, the public will realize that their expectations were mistaken and will revise their expectations of short-term rates downward. The result is that the Fed's decision not to go through with the policy change causes long-term interest rates to fall.

2. A tax cut that is expected to last for ten years will have a larger effect on consumer expenditure than one that is expected to last only one year. The reason is that the longer the tax cut is expected to last, the greater its effect on expected average income and consumer expenditure.

3. In the new classical model, the Fed chairman's plan might work if the public believes his announcement. When the public expects the 10 percent money growth rate and the Fed does implement this change, suppose the aggregate demand and supply curves both move up by 10 percent per year and the price level increases at a 10 percent rate. When the public lowers its expectations of money growth, the short-run aggregate supply curve does not move up by the full 10 percent. Then, when the aggregate demand curve is shifted up by the full 10 percent, the intersection of the aggregate demand and supply curves is at a higher level of output and a lower rate of increase of the price level than 10 percent. Thus, if the chairman is believed, his plan will help to lower inflation and unemployment. However, why should the public believe the chairman if they suspect that he might renege on his promises? If he is not believed (a likely possibility, since the public will try to figure out if the chairman plans to mislead them), then his plan will not work. In the traditional model, the chairman's announcement has no effect on the short-run aggregate supply curve. Thus, the outcome of his policy will be the same, whether he tries to fool the public or not.

4. True, if the anti-inflation policy is credible. As shown in Figure 6, if anti-inflation policy is believed (and hence expected), there is no output loss in the new classical model (the economy stays at Point 1 in Panel b), and there is a smaller output loss than would otherwise be the case in the new Keynesian model (the economy goes to Point 2″ rather than Point 2′ in Panel c).

5. The similarities between the monetarist and new classical view of aggregate supply is that they both assume that wages and prices are set flexible and that expectations about policy affect the position of the short-run aggregate supply curve. The monetarist view of aggregate supply, however, does not make the strong assumption that wages and prices are completely flexible with regard to expected changes in the price level. As a result, some monetarists do not accept the policy ineffectiveness proposition.

6. Uncertain. It is true that policymakers can reduce unemployment by pursuing a more expansionary policy than the public expects. However, the rational expectations assumption indicates that the public will attempt to anticipate policymakers' actions. Policymakers cannot be sure whether expansionary policy will be more or less expansionary than the public expects and hence cannot use policy to make a predictable impact on unemployment.

7. The principle that the forecast errors of expectation cannot be predictable, which implies that unanticipated policy must be unpredictable. Since only unanticipated policy affects aggregate output in the new classical model, stabilization policy can have no predictable effect on aggregate output.

8. True, because the Lucas critique indicates that the effect of policy on inflation and output depends on the public's expectations about the policy. The outcome of a particular policy is therefore less certain in Lucas's view than if expectations about it do not matter, and it is harder to design a beneficial activist stabilization policy.

9. True, if expectations about policy affect the wage- and price-setting process. In models in which expectations about policy are relevant (such as the new classical and new Keynesian models), Figure 6 shows that a credible anti-inflation policy reduces inflation faster and at lower output costs than an anti-inflation policy that is not believed (and hence expected) by the public.

10. Yes, if budget deficits are expected to lead to an inflationary monetary policy and expectations about monetary policy affect the short-run aggregate supply curve. In this case, a large budget deficit would cause the short-run aggregate supply curve to shift more to the left because expected inflation would be higher. The result is that the increase in the price level (the inflation rate) would be higher.

11. In this situation, the aggregate demand curve shifts to the left. But because this shift is expected, the short-run aggregate supply curve shifts out, so there is no change in aggregate output. The intersection of the new aggregate demand and supply curves is at a lower price level but at the same level of aggregate output.

12. In the new Keynesian model and the traditional model, both the price level and aggregate output would fall. In the traditional model, the aggregate demand curve shifts to the left, but the short-run aggregate supply curve is unaffected. The result is that both output and the price level fall. In the new Keynesian model, because the leftward shift in the aggregate demand curve is expected, the short-run aggregate supply curve shifts out; however, it shifts out by less than in the new classical model, so aggregate output falls at the same time that price level falls.

13. The short-run aggregate supply curve would shift to the left less than the aggregate demand curve shifts to the right; hence at their intersection, aggregate output would rise and the price level would be higher than it would have been if money growth had been reduced to a rate of 2%.

14. Using the traditional model, the short-run aggregate supply curve would continue to shift leftward at the same rate, and the smaller rightward shift of the aggregate demand curve, because money supply growth has been reduced, would mean a smaller increase in the price level and a reduction of aggregate output. In the new Keynesian model, the effect of this anti-inflation policy on aggregate output is uncertain. The short-run aggregate supply curve would not shift leftward by as much as in the traditional model, because the anti-inflation policy is expected, but it would shift to the left by more than in the new classical model. Hence inflation falls, but aggregate output may rise or fall, depending on whether the short-run aggregate supply curve shifts to the left more or less than the aggregate demand curve shifts to the right.

15. The traditional model does not allow for substantial shifts in the short-run aggregate supply curve because of new events, so it would predict no change in inflation or output. In both the new classical and new Keynesian models, the rise in expected inflation as a result of the election would shift the short-run aggregate supply curve upward which would lead to a rise in inflation and a fall in output. However, in the new classical model, the shift in the short-run aggregate supply curve would be greater so the rise in inflation and fall in output would be larger than in the new Keynesian model.

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